

# THE IRON AGE

New York, August 15, 1929

ESTABLISHED 1855

VOL. 124, No. 7

## No Alarm for Industry in Federal Reserve Bank Action

BY VIRGIL JORDAN



THE action of the New York Federal Reserve Bank Aug. 8 is probably far simpler and more consistent in its purpose and effects than are the rather far-fetched and abstruse attempts to explain it. I do not think the large and sudden raise in the discount rate and the equally large cut in the rate on bankers' bills should be regarded as another attempt to scare, break or control the stock market, or to discriminate against it. If the market chose to regard it as such, that tells more about the market's state of mind than it does about the Federal Reserve's.

### Reserve System Is Not Specially Interested in Stock Market

As I read the record of Reserve policy and practice in recent years, I do not find that it is specially interested in the stock market at all, or much less that it has been engaged in any sinister strategy to curb it. The Reserve System today is not controlling the money market in any such narrow sense; it is merely responding and adjusting itself to conditions that have arisen through great and far-reaching changes in industry and trade, domestic and international, and the methods of financing them. That, I believe, has been its position and policy ever since 1923.

The changes last Thursday are merely a recognition or symptom of an important fact, which has made many

business men uneasy, but which the stock market is determined to ignore. This fact is that money is abnormally high, which means merely that credit is scarce in comparison with the demand for it. This is true the world over. It has been increasingly true in the past two years, and will remain true as far ahead as one can see, unless there should be a radical change in banking policy and business philosophy.

### Rediscount Rate Does Not Fully Reflect Money Tightness

The central banks of all important countries (except France) have raised their rates and will raise them further if the present situation persists. Here even a 6 per cent rediscount rate does not fully reflect the tightness of money, for the collateral loan and even the commercial paper rate in the open market are higher than that and will probably remain so.

It is useless to blame the stock market and its enormous demand for credit for this tightness of money, or to hurl epithets like "speculation" or "inflation" at the new methods of financing industry and trade which have given rise to this demand. They have come to stay, and their demands are probably going to be met. The banking system will ultimately have to adjust itself to them. The "inflationists" and "new era" philosophy are in the saddle or trying to get in, in almost all countries as well as here.

On Aug. 8, 1929, the directors of the Federal Reserve Bank of New York unexpectedly advanced the rediscount rate from 5 per cent to 6 per cent and reduced the rate on acceptances from  $5\frac{1}{4}$  to  $5\frac{1}{8}$  per cent. The securities' market response was first one of alarm. Then bankers appeared to greet the action as a constructive step. As an important item in the whole matter of the relation of high money rates to business activity, THE IRON AGE asked Virgil Jordan to discuss the question for industry.

Responding under a title, "The Federal Reserve Hews to the Line," he supplements in the accompanying article his contribution in THE IRON AGE of May 30, emphasizing that the new methods of financing industry have come to stay and that the central banks, if left alone, will probably adjust themselves to the existing pressure with safety, on the score that credit resources are adequate for considerable industrial expansion. Mr. Jordan, who has been chief economist of the National Industrial Conference Board for upward of nine years, reiterates that the Federal Reserve Bank is not trying to control the money market in any narrow sense.

The central banks, if left alone and free of political influence, will probably be able in time to adjust themselves to this pressure with safety, for the credit resources, especially in this country, are adequate for considerable expansion. But until they do the depressing atmosphere of tension and strain and tightness in the money markets of the world will continue.

#### Importance of Open Market Credit on General Business Steadily Diminishing

A six per cent rate is not likely permanently to discourage the stock market, nor is the lower bill rate of any special significance as a promise of easier money. Experience has already shown that the discount rate, even when graduated to penalize heavy bank borrowing, affects the rate charged by member banks very little, because the added cost is slight. Its immediate effect on general business depends upon the importance of open market credit in the financing of industry and trade, and this is steadily diminishing, for all types of business except those which are backward in organization or highly seasonal, like agriculture and the scattered, small-scale manufacturing and retail trades.

For this reason the lower rate on bankers' acceptances must be regarded only as a natural concession or adjustment to the special seasonal needs of agriculture, whose production and marketing facilities are as yet

relatively poorly organized and which is more and more getting the short end of the credit rope. The development of large, well capitalized marketing organizations or "stabilization corporations," such as has been begun under the stimulus of the Federal Farm Board, may change this materially. In any case, the credit made available through the lower bill rate for this season will quickly liquidate itself as the crops are finally marketed. It will not float about in the money market for speculators to use for very long, and when it is paid off money will continue as tight as ever.

#### Only Continued High Money Rates Will Force Business Curtailment

We have seen in the past two years that tight money does not necessarily affect business quickly, for reasons which I have pointed out elsewhere. In the long run, however, continued high money rates will force either business expansion or credit policy to give way. The pressure will show itself first in increased costs of government financing, higher taxes and retarded borrowing by agencies compelled to depend upon the bond market. Later, price deflation sets in, slow and chronic. This is already evident in some countries abroad, and even to some extent here, in the persistent refusal of the price level to respond normally to the sustained vigorous business expansion.



## British Survey of Present Status of Chromium Plating

CHROMIC acid and chromic sulphate were originally thought to form the essential basis of a chromium depositing solution, but now practice is in favor of sulphuric acid as a substitute for the chromic sulphate, owing to the high purity obtainable in that acid, said G. E. Gardan in a paper entitled "A Survey of the Published Information on Chromium Plating," delivered recently before the Electroplaters' and Depositors' Technical Society at Birmingham, England. Some selections from his address follow:

The concentration of sulphuric acid in the solution has to bear a fixed relationship to the chromic acid content. For average working conditions one part by weight of sulphuric acid is added to every hundred parts of chromic acid. Variation in that proportion causes a reduction of the cathode efficiency, a low concentration of sulphuric acid being particularly detrimental to the deposit, which is covered with a brown film.

#### Describes a Typical Bath

A typical bath solution contains 40 oz. per imperial gallon of chromic acid, and 0.4 oz. of sulphuric acid. No other added substance is essential for satisfactory working, but it is obvious that chemical changes take place during electrolysis. The most important of these is the reduction of a portion of the hexavalent chromium to the trivalent state. Some workers, therefore, favor deliberate initial production of part of the hexavalent chromium to the trivalent state by chemical or electrochemical means. It is, however, important to limit the concentration of trivalent chromium, for that element reduces the range of current densities for satisfactory deposition.

Chromium plating differs from most other metal deposition processes because of the high current density necessary, the low current efficiency obtained, and the pronounced differences in character of the deposit that results from variations of current density, temperature and composition of the solution. In general, with increasing current density or decreasing temperature, the efficiency increases and the deposit changes from a bluish

color, with bright matte surface, to one with a bright lustrous appearance and finally to a dark iridescent deposit, often described as "burnt." The blue matte is too thin to be of commercial value. The bright lustrous deposit is extremely hard and decorative, and needs little or no subsequent polishing. The dark matte, though extremely hard, can be polished by the normal methods. The current density should be kept moderately high (100-300 amps. per sq. ft.)

#### Some Difficulties of the Process

The nature of the cathode material, and in particular its hydrogen over-voltage, is an important factor in determining not only the initial deposit of chromium but also the ease with which the cathode may be covered with the deposit. In metals of low hydrogen over-voltage, such as iron and steel, the minimum current density at which chromium can be deposited is higher, and the range of current densities in which bright deposits may be produced is both different and more restricted than in the case of metals of high hydrogen over-voltage, such as copper. As nickel has a lower over-voltage than copper, it is not so satisfactory in this respect, but as an undercoat nickel has much to recommend it from a corrosion standpoint and it is now common practice to deposit a layer of this on steel articles prior to chromium plating. Lead anodes of high purity are very satisfactory and the gradually formed insoluble lead chromate has no detrimental action on the bath.

Electro-deposited chromium is distinguished from other metals by its resistance to corrosion, resistance to oxidation at elevated temperature and its extreme hardness and low co-efficient of friction. As deposited, the reflectivity is only 65 per cent, but in contrast with other metals, that figure is permanently maintained. Chromium is unattacked by salt water, ammonia, nitric acid and hydrogen sulphide. Dilute sulphuric and hydrochloric acids only vigorously attack the metal after it has been rendered "active" by cathodic polarization, namely, by contact with zinc in the acid.

# Conveyors for Molding Operations

Large Use of Mechanical Equipment for Handling Materials in Automotive Plant—Feeder Lines for Sand and Other Materials Reduce Labor Costs

**C**HARGING methods for cupolas in the Oakland foundry at Pontiac, Mich., were covered in THE IRON AGE issue of July 25, page 207. This had to do primarily with the matter of preparing the charge for the cupolas, getting it weighed and transporting it to the place where it was to be used. In the following pages the molding and core-making operations are described, and handling of the castings on cooling conveyors and thence into the cleaning department.

There are seven conveyors for continuous molding and pouring, with room for one additional molding unit. One unit is for cylinder blocks, one for cylinder heads, one for manifolds, one for flywheels, one for gear covers and some other parts, one for transmission cases and one for miscellaneous castings.

All but the cylinder block mold conveyor, which is 200 ft. long, are 180 ft. in length. The cylinder block conveyor is of the ordinary drag chain type. Cylinder block molds are made on five drag and five cope machines. The drags are handled from the molding machines to the conveyor with jib cranes. The copes and cores are handled with Cleveland Electric tramrails and the pouring done with

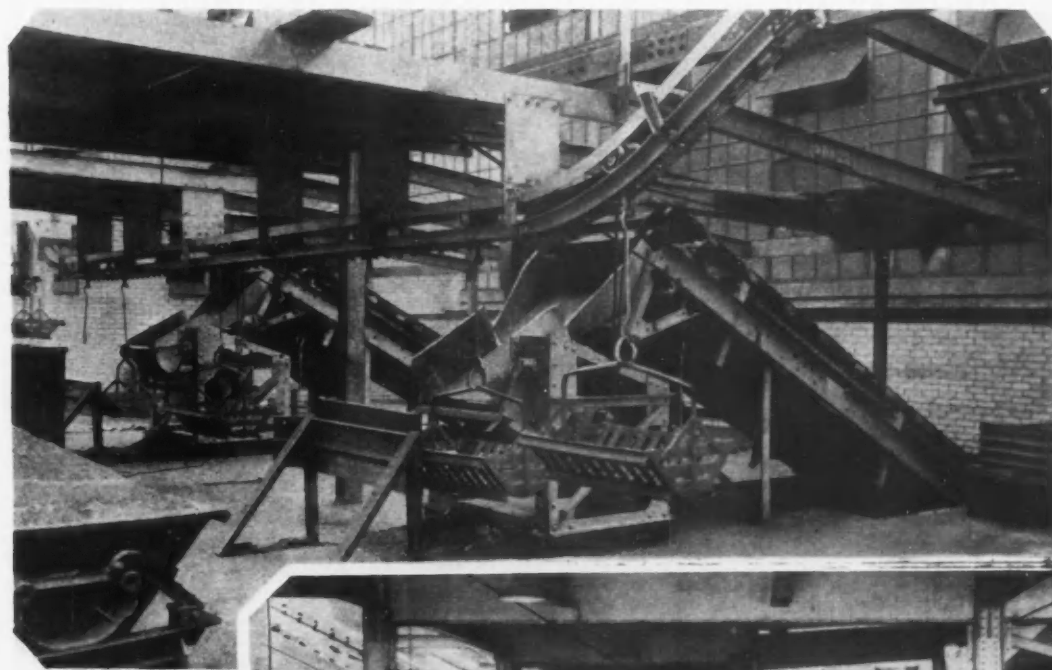
them. Molds are carried around to a secondary cooling line, which conveys them to the shake-out.

## Unusual Construction of Conveyors

Five of the conveyors are of a new roller type. In these the general practice of using conveyor trucks operating on rails is reversed by having rollers on a stationary frame and the mold trays equipped with inverted rails fastened to their bottoms. Thus the rails move on the rollers. The trays are 24 x 54 in. These cover the rollers and driving chain, the latter on the inner side of the frame. It is claimed for this type of conveyor that a smoother action is secured and an accumulation of sand on the rails is prevented. The conveyor for miscellaneous castings is of the sliding type and has smaller trays.

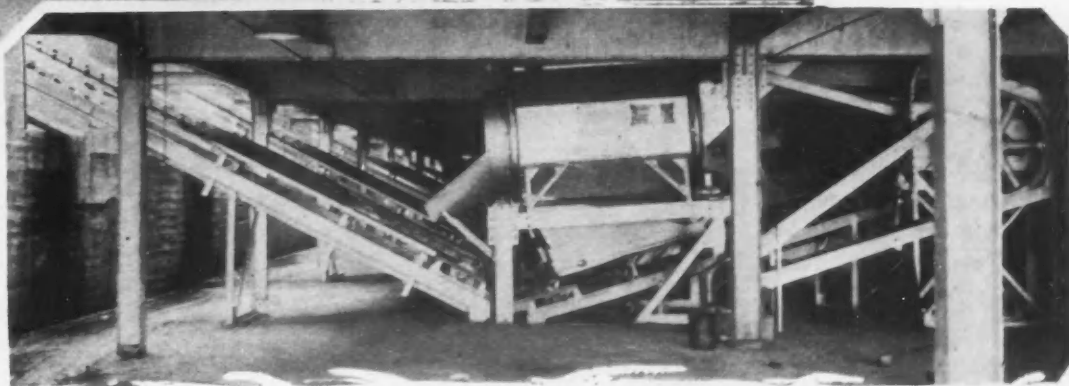
The conveyors are on the usual oval plan, except that that for the cylinder blocks makes a complete circuit. The cooling or return line of each is hooded and provided with an exhaust system for carrying away the smoke and gases.

Copes of cylinder molds are shaken out half-way down



**C**ASTINGS and Sand Are Dropped from the Shake-out Into Tumbling Mills in the Basement. Thence the castings pass on to the conveyors at the left, which carry them out of the foundry and deliver them to the cooling conveyor (Below)

**D**ISCHARGE End of Two of the Conveyors Which Carry the Castings from the Basement. Castings are dumped into baskets hanging from the cooling conveyor (Above)





the return line with a Stoney shake-out bail located at an opening in the cooling hood. Empty flasks are placed on a gravity conveyor and returned to the cope machines. The drag mold and casting move to the end of the conveyor, where a hoist picks the casting from the drag flask and hangs it on to a casting conveyor. As this loading point is at the side of the foundry, the casting is carried a few feet to reach the outside of the building, so that little of the heat and fumes escape from the castings into the foundry. The drag flasks are shoved by a pneumatic pusher on to a shake-out and, after the sand is shaken out, are returned to the molding machines.

Drag molds of all castings except cylinder blocks are dumped over a shake-out and the castings dropped with the sand through an opening in the shake-out to the basement. Here they pass into a tumbling barrel 54 in. in diameter by 10 ft. long, the outer circumference of which is a perforated plate. The sand passes through the perforations and the castings on to an inclined apron conveyor which conveys them outside the foundry, the discharge ends of the six conveyors being in a straight line near the side of the building.

#### Castings Cooled in Open Air

These conveyors discharge the castings into a hopper which is dumped by an air hoist into a basket that is hooked on to a cooling conveyor located above the discharge end and at right angles to the flight conveyors.

There are four cooling conveyors, from 900 to 1500 ft. long, including the one for cylinder blocks previously referred to. One is for cylinder heads and flywheels, one for manifolds and housings and the third for transmission cases and miscellaneous castings. The baskets of castings are hung on hooks on 4-ft. centers. Cylinder blocks, not carried in baskets, are hung on the hooks. Cylinder

blocks are carried on the cooling conveyor approximately 2 hr. and other castings 90 min. for cooling, before they reach the cleaning room, on the same conveyor line.

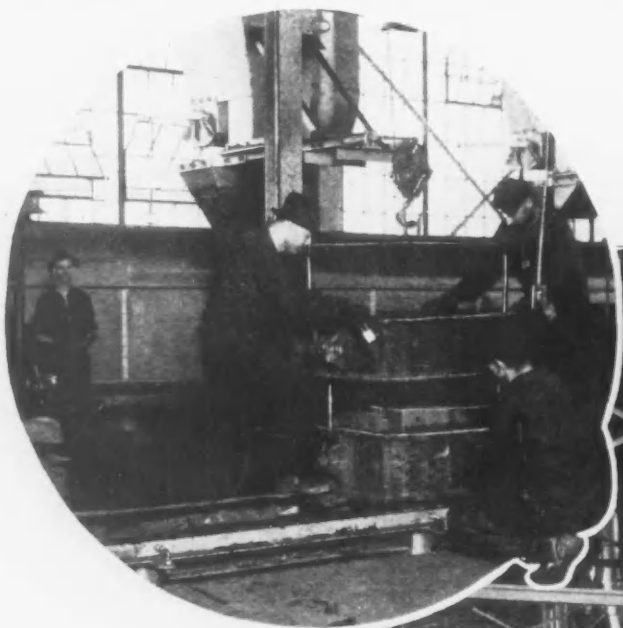
Cylinder blocks move on the conveyor through a detached knock-out building, where they are cleared of sand on a Stoney knock-out machine and are then returned to the conveyor. The molding sand passes through a riddle and the core through a crusher; all the sand goes over a magnetic pulley to take out the metal.

Then the sand is discharged into a pit, where it is made fluid by being mixed with water. The sand and water are kept thoroughly mixed by being agitated by a spray of water. The sand is carried away by a hydraulic pump, being delivered to a dump through a 5-in. line. Dust collected in the cleaning department is handled in the same way, being delivered from the dust arrestor on the roof to the same pit that receives the knock-out sand.

Cylinder blocks, on reaching the cleaning department on the cooling conveyor, pass on the same conveyor through a Pangborn double sand-blast machine. Then they are ground with a swing grinder, tumbled and given a water test. For testing they are placed in a revolving fixture placed on a roller conveyor so that the blocks can be turned over, permitting the testers to see inside the barrels.

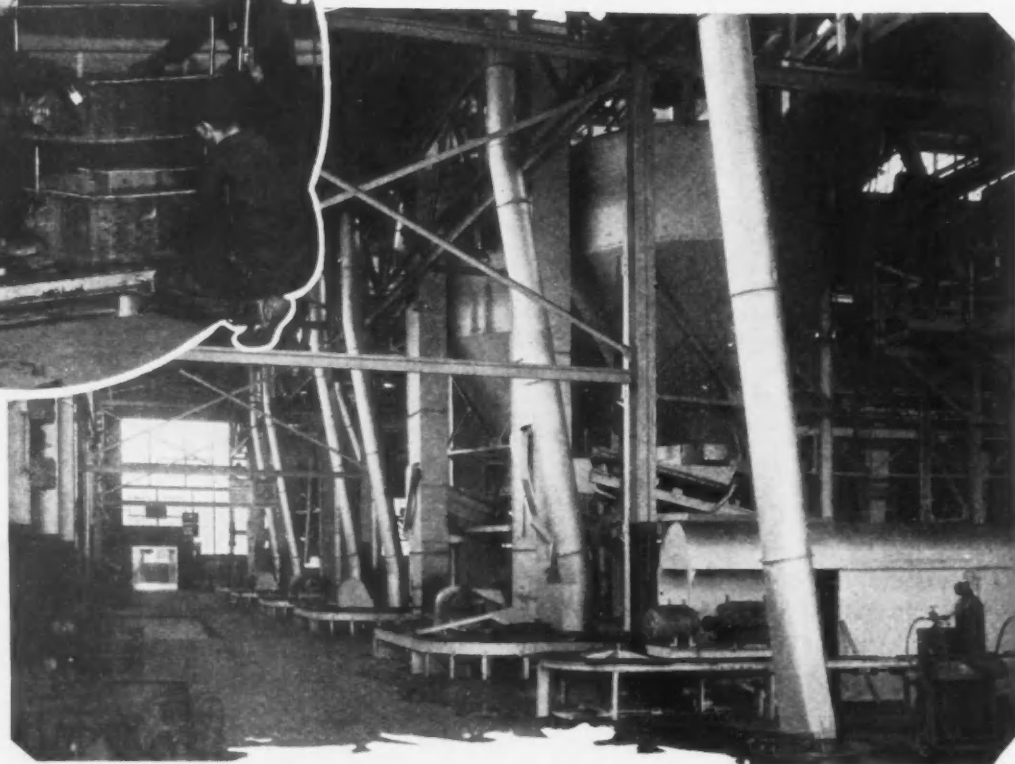
The bottoms of the baskets that carry the smaller castings on the cooling conveyors, instead of being flat, turn up at an angle of 90 deg. on each side, making it easy to dump the contents. The castings are dumped into skids, which are handled by electric trucks for the tumbling, chipping and grinding operations. The tumbling equipment consists of 40 Whiting tumbling mills with 36 x 80-in. barrels, motor driven in batteries of six.

The cleaning department is well arranged and equipped. It is entirely free of belts and piping, all pipes for exhaust lines from the tumbling mills being



SETTING the Cope on the Drag on the Cylinder Block Conveyor (Above)

ONE Side of the Foundry, Showing the Ends of the Molding Units and Sand Hoppers. The pipes are for ventilating the basement (Below)







**FIXTURE** in Which Cylinder Blocks Are Rotated While Being Water-Tested After Final Operations in the Cleaning Department

**POURING** Flywheels on One of the Mold Conveyors



under the floor. Air drawn through the dust arrestors, after cleaning, is returned to the building during the cold weather. Otherwise, with a large amount of cold air being brought in to replace the heated air removed, it would be difficult to heat the building. Gravity conveyors and electric hoists are provided wherever needed to facilitate the handling of work through the cleaning operations. The tumbling mills are served with electric hoists.

#### Core Ovens of Vertical Type

Efficiency and saving of space are effected by the arrangement and equipment of the core-making department. This is provided with 16 vertical core ovens 8 ft. 6 in. square and 45 ft. high. These are oil fired and have automatic control, which maintains the temperature at approximately 450 deg. Fahr. On their downward course the cores pass through a cooling chamber and, when they reach the floor level, they are ready for inspection and assembly.

Cores for each oven are supplied by a group of 4 to 12 core-makers, who work around the oven. The core-maker sets his own cores in the oven and takes an empty tray back to his bench to be loaded. This eliminates the use of racks and the provision of aisles. Owing to the use of vertical ovens, it is stated that the core department takes only about one-fourth as much space as otherwise would be required.

A new design of hydraulically operated vertical oven is provided for drying cores after pasting. These are carried on 26 x 42-in. trays which are raised by a cylinder operated by a motor-driven pump. One pump and one motor serve the three ovens of this type. The cylinder located beneath the oven raises the loaded trays 15 in., at the same time pushing up the stack of trays above. When the cylinder descends, a catch holds the trays in position. As each tray reaches the top of the oven it moves automatically over to the opposite or return side of the conveyor. The cores remain in the oven about 25 min. An advantage claimed for this type of

oven is that, as the trays do not turn on sprockets at the top or bottom, they can be spaced closer together.

The core sand is delivered to overhead hoppers and distributed on monorails to hoppers above the core-makers' benches. Core sand is prepared in three batch mixers supplied by the Standard Sand & Machine Co. The foundry makes its own sea coal, using a Grindle multi-stage pulverizer for pulverizing the coal. The sand preparation equipment includes two Simpson mills.

Three sand-handling systems serve the molding units: One for the units making cylinder blocks and heads; one for the flywheel and manifold molding units; a third for the transmission cases and miscellaneous castings. Room is provided for a fourth sand-handling system.

#### Preparing Sand for Various Uses

Sand from the tumbling mills in the basement, which separate the sand and castings, is conveyed on a belt conveyor over a magnetic separator to a bucket elevator that delivers it to a revolving screen above the foundry floor. The screened refuse sand is discharged to boxes on the floor. The good sand from the screen goes to a primary tempering belt and thence to a paddle mixer, which delivers it to a circular storage bin of 100-ton capacity.

A revolving table feeder takes it from this bin to a

second elevator, which delivers it to a final tempering belt. In the first tempering moisture is added to the sand and it is given time to season in the storage bins. After the last tempering the sand is aerated in a squirrel cage type of aerator and then delivered to two flight distributing lines, from which it is automatically delivered to hoppers over the molding machines. Strike-off and spill sand passes from the foundry floor to reciprocating conveyors beneath, which deliver it back into the system. New sand is introduced automatically and uniformly through floor hoppers with revolving plate feeders.

Facing sand for the cylinder block and cylinder head lines is brought from the sand preparation room in trucks, delivered to floor hoppers, elevated and distributed by flight conveyors over the molding units to hoppers over the molding machines, the overhead sand-handling equipment having double flights and compartments, to hold both molding and facing sand.

Sand is stored in concrete bins in the sand storage building, which has a capacity of 450 cars and is served by an overhead crane.

Dimensions of the principal buildings are: Foundry, 247 x 260 ft.; core department, 160 x 247 ft.; cleaning room, 120 x 350 ft.; service building, 60 x 360 ft.; sand storage building, 80 x 225 ft. Adjoining the cupola department is a chemical laboratory in which the heats and raw material are checked. On the second floor of the service building are a pattern shop, pattern storage room, men's lockers and women's rest room.

The foundry was laid out and built under the direction of J. E. Linabury, the foundry manager, being designed and built by the Austin Co. The mold conveyors and those for handling pig iron, scrap and briquettes to the weighing scales were supplied by the Link Belt Co., the cooling conveyors by the Palmer-Bee Co. and the core ovens by the Detroit Sheet Metal Works.

## Makes Steel Casting Requiring 360,000 Lb. in the Rough

**I**NCREASES in the forging activities of automobile manufacturers in recent years have led to unusual problems in the making of steam hammer castings and culminated in the casting of an anvil block, pictured in the accompanying illustration, the machined weight of which is 240,000 lb. This casting, which was made by the Wheeling Mold & Foundry Co., Wheeling, W. Va., for a 25,000-lb. drop hammer now being built by the Chambersburg Engineering Co., Chambersburg, Pa., for shipment to an automobile manufacturer in Italy, required unusual care in production because of its size and specifications.

It is of mild steel of the following analysis: Carbon, 0.23 per cent; silicon, 0.30; sulphur, 0.029; phosphorus, 0.034, and manganese, 0.90. The heats from three open-hearth furnaces were required to pour the casting, a total weight of 160 tons. A second heat of 20 tons was required 16 hr. later to take care of shrinkage. In the meantime a furnace was built around the sink head, which was lined with Sil-o-Cel brick and properly fired to delay freezing of the casting proper until all of the steel was available and also to maintain a liquid situation while the steel was cooling in the main body of the casting.

The block was cast with the working face down in a

dry sand mold set in the floor, the bottom of the block being level with the floor. Small cores were not considered, owing to the huge volume of metal, but two lightening cores were used successfully in each end. The block was too large to remove from the pit in its entirety and the riser was cut off by means of an oxy-acetylene jet. This cut was 28-in. deep all around the riser, leaving a final core 4-in. in diameter, which was knocked off.

As the crane capacity of the foundry was not large enough to handle a casting of this size, unusual problems of moving had to be met. Temporary trunnions were cast on the ends to facilitate handling in addition to the permanent ones on the sides. The end ones were later removed. In order to move the casting from the pit, ways were built and the block was turned around and skidded on a truck bed on greased skids. It was then moved about the foundry on a 150-ton truck on a turntable. The problem of transferring the casting to the customer also involves difficulties as only one or two railroad cars are large enough to carry it. When the block is prepared for the ocean voyage to Italy, special bulkheads will probably have to be built in the ship's hold to prevent shifting.



**T**HIS Anvil Block, on Car Ready for Shipment, Has the Record - Breaking Weight of 240,000 Lb. It is 156 in. long, 95½ in. high, 84 in. wide at bottom and 55½ in. wide at top

# Steel Which Is Sound in Blooming

## Precautions Necessary for Best Results—Preferential Range of Temperatures—High Manganese Content

BY JOSEPH R. MILLER\*

EVERY mill rolling the regular grades of common carbon steel has made some study of the causes of seams and slivers. It is safe to say that nowhere have these causes been so well and so definitely located that control can be applied with fully successful results. Widely divergent ideas regarding particularly the proper procedure in teeming, handling, charging and heating the ingots have resulted from studies and observations made. The difficulty lies in interpretation of the facts observed and is due to the complexity of the conditions surrounding the entire sequence of operations.

It is not uncommon, therefore, to find that the full burden of the elimination of seams and cracks has been shifted to the steel maker. In such cases it is assumed that if a good quality steel is teemed properly into proper molds other features may be neglected. This applies in a general way; that is, good steel making will lessen the problems of the blooming process.

It applies, however, to such grades of steel as have no peculiar characteristics that involve hot-short qualities at one or another temperature. These latter grades tend, in rolling, to break up into seams and slivers, and steel-making skill does not operate to change the condition. Also, in general, if the sulphur content cannot be kept down the general tendency of the output will be toward greater trouble in that direction and here, too, the steel maker is handicapped.

Assuming a careful practice in steel making and a good soaking pit operation with proper pass design in the blooming mill, there still remains the question of steel compositions and their appropriate rolling temperatures.

### Preferential Range of Rolling Temperatures

Everyone is familiar with the fact that ingot iron has a decided preferential range of rolling temperatures. It is a fact, not so well recognized, that the common grades of steel have such preferential temperatures, although to a much less marked degree. However, mostly, the range of unsatisfactory rolling is extended, pushing the most satisfactory range up toward the burning point of the steel. The writer had, at one time, arranged a series of tests to compare different compositions and to bring out the suitable temperature for each.

An electric heating element was placed in refractory in such a manner that special test specimens could be heated while held in the grips of the tensile-testing machine. A thermo-couple gave the temperature. With this apparatus it was possible to break specimens at the various temperatures at which steel might be rolled in the blooming mill. It was found that, when specimens broke off short in the test, poor rolling was observed on that steel at the temperatures so represented; but when specimens necked down to a sharp point, or nearly so, good rolling was observed on that steel at those temperatures. That would be, of course, on the earlier

passes in blooming, for, once reduced, the grain refinement begins to strengthen the material.

With this method he also started in 1918 to test samples prepared from such ingots as were found to contain an accidental high manganese content. These usually were observed to roll well. Thus it was determined that open-hearth free cutting steel (added sulphur) would roll much better if the manganese specification, formerly around 0.60 to 0.80 per cent, were raised to about 1¼ per cent.

### Rejections Ran High

Rejections on the old grade ran very high on blooms for bars for cold-drawing purposes, or for machining—somewhere around 20 per cent average. And often half the blooms would have to be diverted. With manganese specified at about 1¼ per cent these rejections dropped to 2 to 5 per cent. Earlier production was sold under a trade name, and was found suitable for free cutting and case hardening purposes.

Thus a grade of steel which formerly was a source of great annoyance and loss in rejections was changed to one that was easily prepared and without serious losses. The idea that raising the manganese content would induce a brittleness and hardness was shown by test to be erroneous, for such brittleness was not encountered to any extent until the composition was well up around 2 per cent manganese. Steel made with 1¼ to 1½ per cent manganese was found to be free cutting and tough; also it case hardened satisfactorily. The first of open-hearth screw steel with this higher manganese was made in 1925, and was used with success.

It would be difficult to favor, in blooming, a preferential temperature. However, by careful heating an approach can be made to the best temperature conditions, and particularly where it is best to start rolling at very high temperatures. It is possible, however, to make composition changes, like that mentioned, improving the rolling qualities without changing the utility of the product.

### Steel Clean of Oxides Rolls Better

Of course, if the sulphur is low, and the steel comes through clean of oxides without excessive deoxidation, it will roll better. Some claim for certain chemical mixtures that through their use unusually tough metal is produced; and it is sure that, if the materials used in a heat of steel bring it out clean without the excessive use of aluminum and silicon, the metal will roll better, even in spite of the sulphur.

The problem of making steel which is free from seams and slivers lies between excessive care in handling and rolling the ingots after teeming, and the production of a tough metal that will roll without great care. In tonnage operations the latter is preferred, because it allows greater production from the blooming mill. In making special grades which do not in their nature roll well,

\*Pittsburgh.



then special attention must be given the ingots after teeming, as there is no other way out of it.

There are special shapes of ingots intended to favor a certain amount of hot work before any strain is put on

the ingot skin. These do some good, and they simulate the fluted forging ingot. However, no precautions will produce a result as successful as that attained when a tough composition of well made steel can be used.

# Forging Seamless Steel Drums



## Difficulties Encountered in Expanding a Thin-Walled Tube—Ends of Various Shapes Closed by Different Methods—Limitations in Accuracy

BY CAPT. RONALD BENSON\*

**P**RODUCTION of large drums is similar to the production of gun tubes. The first requirement is a hollow billet. This is prepared by trepanning the core from the center of an ingot, which may or may not have had a preliminary cogging, and cutting off the scrap ends. The hole is usually smaller than the interior of the drum for reasons of economy.

The hole is next opened out by expanding, or "becking," to the size needed. The length of forging which can be becket varies with the plant, and the diameter of the becking bar, and is usually between 10 and 16 ft. The next process therefore will be forging on a mandrel of the required diameter, so as to increase the length while reducing the wall thickness.

### Producing the Hollow Tube

The two chief difficulties are the rapid loss of heat and the action known to forgers as "bellying."

The length of time during which forging can be carried on after each reheating varies inversely with the diameter of the mandrel, and directly with the wall thickness—e.g., with a 36-in. mandrel, working from a billet roughed down to 60-in. diameter, the forging of a tube with a 4-in. wall could be carried on for only something between 60 and 70 min. If a tube with a 6-in. wall were being made, forging could go on for 90 or 100 min.

Such rapid cooling may be reduced by heating the mandrel. A good working rule is that if the mandrel does not change color it is safe to proceed. The most economical method of keeping the mandrel temperature as high as this is to forge two tubes concurrently on the same mandrel, one being forged while the other is being re-heated. Or a hollow mandrel may be used. If a central hole one-half the radius is removed, the volume of mandrel tending to chill the forging is reduced 25 per cent.

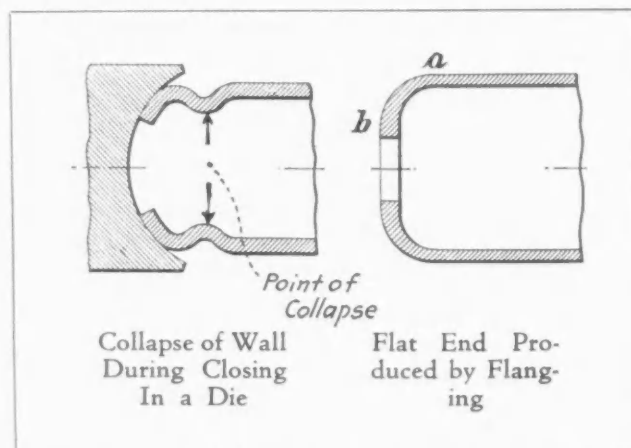
The other chief difficulty, known as bellying, is the flow of squeezed metal in a circumferential, as opposed to a longitudinal direction. It is greatly intensified in thin tubes, and is almost absent in thick-walled tubes, forged on small mandrels. The ideal tools would have narrow circumferential faces in contact with the forging, so that all the flow would be at right angles to these faces, i.e., in a longitudinal direction. If the face of the tools is too narrow, however, a very large number of squeezes is needed to produce a true cylindrical surface. As a compromise, curved tools with narrow faces and beveled sides are used. With such tools the tubes produced are so close to the mandrel that "fast mandrels" are occasionally en-

countered. A few squeezes with flat tools always loosen the mandrel.

### Machining the Inner Bore

The machining allowance varies with the furnace and time of heating, but a rough rule is to allow 1 in. on all surfaces in addition to mandrel taper allowance.

There seems to be no reason why boiler drums should not be accepted with a black forged finish outside—in fact, tubes of this nature have been supplied—but it is necessary to specify a tolerance of approximately  $\frac{1}{2}$  in. in the



thickness of wall. The interior cannot readily be produced sufficiently free from scale to obviate machining.

It is usually expedient to bore a straight hole through from end to end, and subsequently to close both ends. Or one end can be closed before machining, leaving one end open for machining purposes, to be closed subsequently. Designs usually call for a thicker wall on the closed end than on the shell—allowance must be made for this.

### Closing the Ends

There are three possible ways of closing the ends of the drums:

- (1) By pressing the end of the forging into a die, as in shell bottling.
- (2) By flanging or bending over.
- (3) By swaging, the process being similar to the work of the toggle presses sometimes used for closing shells and gas cylinders.

The first method is quick and simple for closing ends where the proportionate reduction in diameter is small, but tubes of the kind described would be closed to approximately one-third the original diameter. It is therefore

\*Vickers-Armstrong, Ltd., Abstracted from *Engineer*, April 19, 1929.

quite impossible to carry out such a closing in a single-operation die, because the pressure required is greater than the walls of the parallel portion can support. Even if only the length of tube exactly sufficient to form the closed end were heated, collapse would take place in the parallel portion where it just enters the die, as shown by the sketch. Yet this portion at least must be heated to enable closing in a single operation.

In practice, a large number of dies of varying angles have to be used, the work done in each die being small, and the expense is too great. The closed ends so made are, however, very well formed and evenly stressed in closing.

#### Closing the End by Flanging Method

The second method of closing is by bending over, or flanging. The open ended tube is bored, and rough machined outside. The portion which it is intended to bend over is rough machined for concentricity only, and extra thickness is left on it to suit the design required. The end to be produced is approximately as shown in the sketch. The length of parallel tube required to make the end from *a* to *b* can be determined only by experiment.

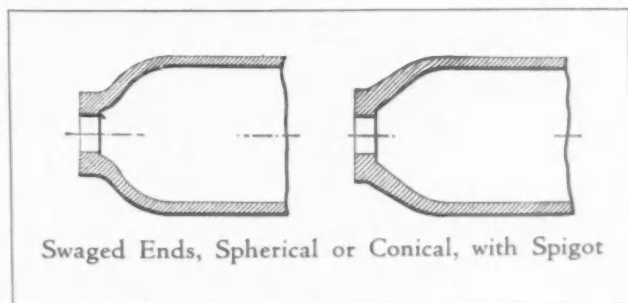
The usual process is to support the drum from below, prevent it from kicking back, and bend a small portion of the periphery downward at the top by pressing on it with a suitable tool. The tube is then rotated slightly, and another portion of the end bent over, so that by the time the tube has been completely rotated the end has been flanged over somewhat, and the opening in the end reduced. Successive applications of pressure must be small and uniform, or an irregular and crinkled surface of the flat end may be produced. It is not possible to close the end completely by this method.

#### Swaging the End

The third method of closing is by swaging. The process is essentially a series of small compressions of the walls of the tube in two places.

The effect of one squeeze, with the tube in the position shown, is to thicken the wall at *a* and *b* and to reduce the portion of the tube which is being worked upon to an ellipse, the major axis of which is the original diameter, the minor axis being reduced by the amount which the press has traveled. If now the tube be rotated, and a series of squeezes be applied, the ultimate result is that the wall is thickened and the diameter decreased.

There is a tendency for the portion of the tube which is being worked upon to increase in length. The ratio of circumferential flow to longitudinal flow depends upon the design of the tools and the method of manipulation; with



unsuitable tools the wall thickness may even be less after the diameter has been reduced than it was before.

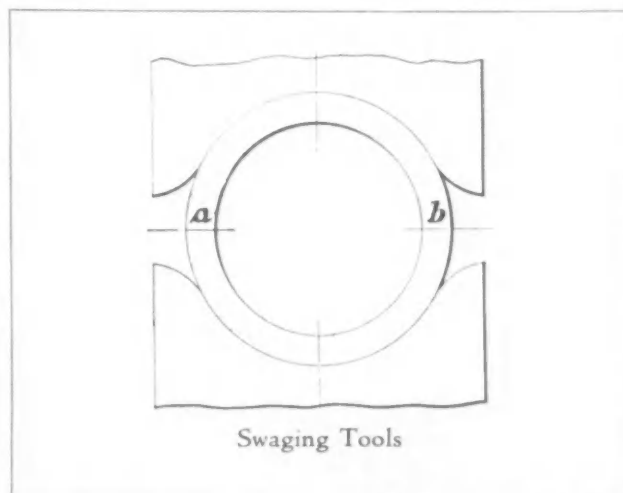
This ratio, however, must be known. Also, the longitudinal extension of the dome portion must be allowed for, so that the drum shall be of the correct length when closing is completed. It is usual to allow a tolerance of 1 in. on the overall length, and it has been found possible to work within this tolerance for a drum 45 ft. long.

Special tools are needed to shape the domed end of

the drum unless a considerable amount of machining is to be done on the exterior after closing.

It is not practicable to produce a drum with a flat or slightly dished end by this method. The easiest shapes are either hemispherical or conical, with a protruding spigot which is machined inside to form a seat for the manhole cover, the length of spigot desirable being 3 in. to 4 in. with a 4-ft. drum.

The wall thickness of the domed end can be increased to any desired amount. In fact, the thicker domes are



slightly easier to produce, so the designer can call for an end which he is sure is much stronger than any other part of the boiler.

Seamless vessels intended for oil cracking, with a 2-ft. bore, have been produced with one end swaged down till the only trace of the original bore was a small line which did not extend beyond a circle 2-in. diameter, and the ends were closed, after boring, by a screwed plug only 3-in. diameter.

### Sheffield University Opens Cold-Working Steel Laboratory

A NEW laboratory for research on cold-working of steel was opened on July 6 at Sheffield University, Sheffield, England, as the consequence of a gift from the Worshipful Co. of Ironmongers of London. This company has made a grant of £800 a year for seven years to endow a fellowship and two scholarships in the cold-working of steel. Through the Cutlers' Co. of Hallamshire, firms connected with the cold-working industry have presented the university with the necessary plant.

The laboratory will be attached to the metallurgical and engineering departments of the university and will be controlled by the professors of those subjects, assisted by a committee on which the Ironmongers' Co., Cutlers' Co. and the industry will be represented, as well as the university. Drawing, rolling and pressing are among the processes on which research work will be done.

The mechanical equipment of the laboratory includes a wire and bar drawing plant constructed by George Crossley, Ltd., Cleckheaton. Having a two-speed gear and variable-speed motor, wire drawing speeds of from 28 to 360 ft. a min. may be obtained, and wires can be drawn of all sizes up to  $\frac{3}{8}$  in. in diameter and rods up to 1 in. diameter.

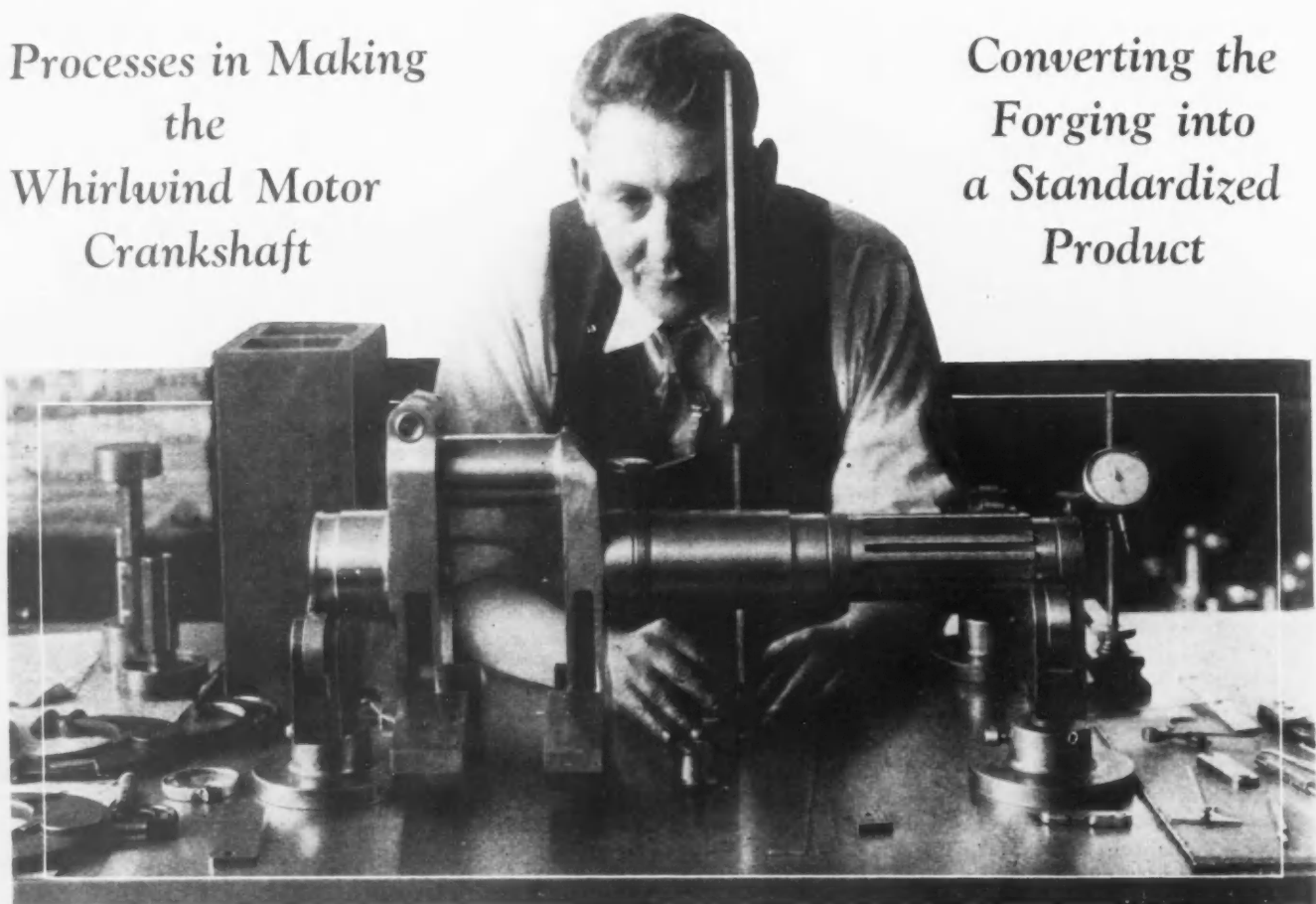
The rolling mill plant has been constructed by W. H. A. Robertson & Co., Ltd., Bedford. It has hardened steel rolls, 10 in. diameter and 10 in. face, and is fitted with two-speed gear box and variable-speed motor, giving a range of rolling speeds from 60 to 300 ft. a min. The motor is capable of developing from 50 hp. at 570 r.p.m. to 120 hp. at 1260 r.p.m.

# Machining the Wright Crankshaft

BY FAY LEONE FAUROTÉ\*

Processes in Making  
the  
Whirlwind Motor  
Crankshaft

Converting the  
Forging into  
a Standardized  
Product



**F**OR the Wright Whirlwind crankshaft, steel forgings are purchased from an outside vendor. These are first heat treated, then inspected for flaws or defects and stamped with a serial number. Spots are ground for the hardness test. The forgings are then inspected for hardness and delivered to rough stores.

Preparatory to machining the crankshaft forging, the shaft end and pin end are cut off and both ends centered. The shaft side of the cheek is then faced, chamfered and turned to outside diameters. The cheek faces are next rough milled, and the outside diameter and cheek are rough ground. The crankpin is then centered, turned and faced. The cheek faces are rough milled on the pin side, after which the pin is finish turned and faced, and the chamfers and groove are formed. The next operation is to rough grind the pin and form the radius. The cheek edges are rough milled, and the serial number is then re-stamped.

Next the crankpin is drilled, rough and finish counter-bored, chamfered, rough and finish reamed and tapped. The radius on cheeks is milled, also the radius on long end of cheeks and the angle on cheek. A 1 $\frac{3}{8}$ -in hole 1 $\frac{1}{4}$ -in. deep is then drilled and gun-drilled through. The end is next counterbored, bored, reamed and faced, the taper is rough and finish reamed, and the whole is chamfered.

\* Mechanical engineer, New York. This is one of a series of articles describing the machining of the chief parts of the new Wright Whirlwind aeronautical engine. The first article appeared in THE IRON AGE of July 18, page 148.

## INDICATING Trueness and Checking for Alinement on Crankshaft of J-6 Series "Whirlwind" Engine

The slot on side of cheek is then milled, and the operation is repeated for the opposite slot, bringing the two slots into alinement. A  $\frac{1}{8}$ -in. x 45-deg. chamfer is milled on each side of both slots. The web in slot is rough milled, and the sides of slots are then finish milled.

The next operation is to drill four holes through both sides of cheeks. The alinement hole is then drilled through the center of cheek. Burrs are removed and the slots are filed to gage.

Next the crankpin side of cheek is faced and the shoulder and radius are formed. After this the crankpin side of cheek is milled, the cheek is faced, the outside diameters finish turned, and the undercuts chamfered and formed. A hole for screw is then drilled, counter-bored and tapped. A  $\frac{1}{4}$ -in. hole is drilled through the crankpin wall at a 30-deg. angle, reamed and chamfered; and another  $\frac{1}{4}$ -in. hole is drilled through the bottom wall of the crankpin at a 40-deg. angle.

The crankshaft next goes to a plain grinder, where the shaft side of cheek is finish ground and the radius formed. The outside diameters are also finish ground.

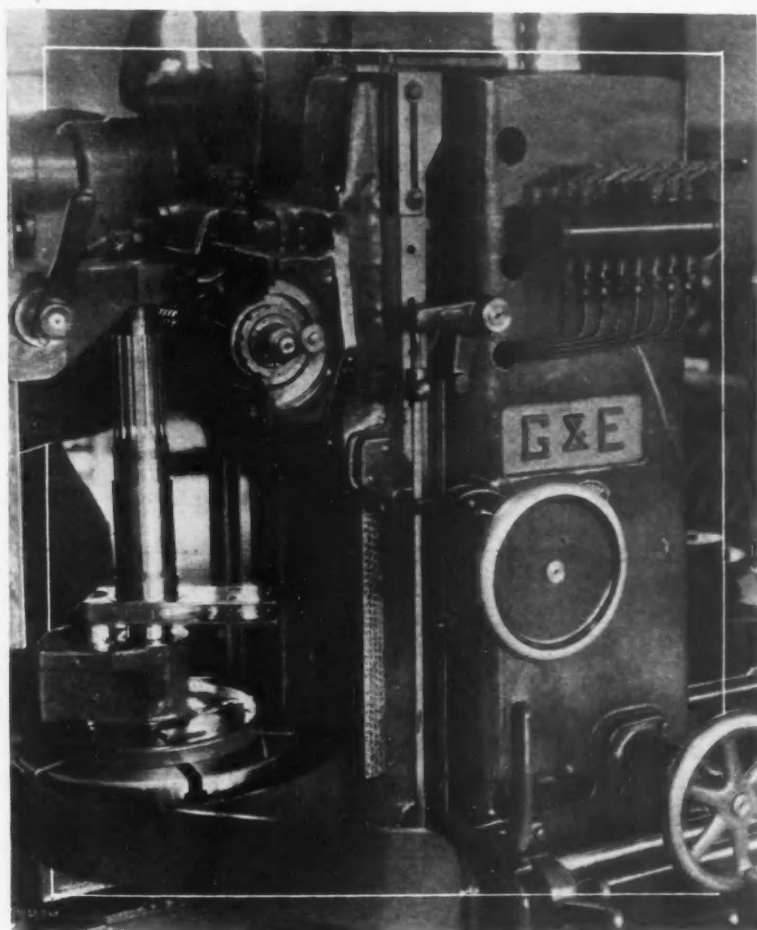
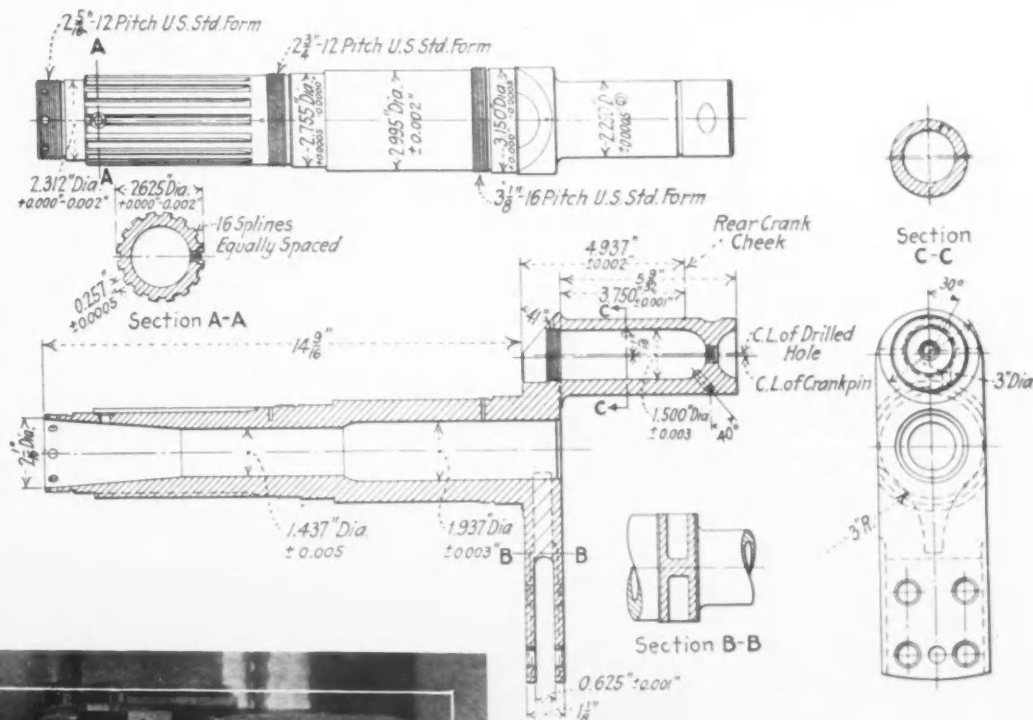


The next operation is to mill a  $3\frac{1}{8}$ -in.—16P thread on the shaft, near the cheek; then a  $2\frac{3}{4}$ -in.—12P thread, about halfway to the end; then a 2-5/16-in.—12P thread at the outer end.

After the cheeks have been ground on both sides, the splines are finish hobbled and burred to gage. The crank-

pin side of cheek is ground and the radius formed; after which the crankpin is finish ground and the collar ground. Radii are then drilled and formed and the crankpin end is chamfered. A radius is then bored in the crankpin, these two "radii" forming the spherical or cup-shaped surfaces inside the crankpin.

THESE Drawings of the Crankshaft Give Some Idea of the Dimensional Exactions of Manufacture



MILLING Crankshaft for Propeller Hub on Gould & Eberhardt Hobbing Machine

Eight holes, equally spaced and  $17/64$ -in. diameter, are drilled through the thread end of the shaft. Burrs are removed, sharp edges broken, and the holes tapped. The end of the crankshaft is then faced to remove center mark.

Finally, the radii are polished and the crankpin lapped. The crankshaft is washed in gasoline, inspected and delivered to finished stock.

Open-pit methods of mining, by which coal or ore is mined from the surface by the use of steam or electric shovels has been developed to a point where approximately 19,000,000 tons of coal, 24,000,000 tons of copper ore, 32,000,000 tons of iron ore, 150,000 tons of bauxite, and 2,700,000 tons of pebble phosphate are mined annually in the United States in this manner. These quantities total 78,000,000 tons, and, according to the Department of Commerce, at least four times that amount of overburden is stripped to expose these minerals for mining. The power shovels used in the stripping operations range in dipper capacity from 3 to 12 cu. yd., weigh 125 to 850 tons, and may cost \$100,000 or more.

A list of 1000 American books, pamphlets and publications on various phases of international business has been compiled by National Foreign Trade Council, New York. Of these, 170 have been marked as those currently in use by active foreign traders. A five-foot shelf of 40 books has also been selected by a consulting committee.

# Using Electricity for Galvanizing

Accurate Control and Uniformity of Temperature,  
Assured by Electric Heat, Lower  
Costs of Hot Galvanizing

BY R. M. CHERRY\*

**E**LECTRIC heat has been successfully applied to hot galvanizing for various types of products, such as wire, structural steel shapes, castings, and sheet metal parts and pails.

The temperature required for hot galvanizing ranges in most cases from 825 to 900 deg. Fahr., depending upon the class of work. Occasionally temperatures as high as 1000 deg. Fahr. may be used, as in the case of galvanizing light wire mesh. The life of the tank, amount of dross formed, fuel consumption, and quality of product are largely dependent upon accurate control of the desired temperature and upon uniform temperature throughout the tank.

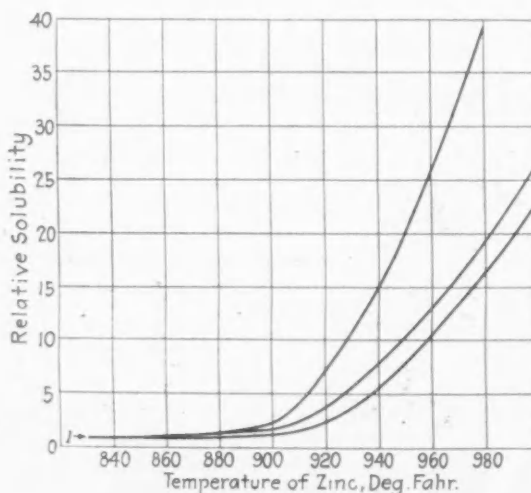
The accompanying curves illustrate the influence of these two factors. They show the relative solubility of iron in zinc at various temperatures and show that the analysis of the steel used for the tank has some effect on the rate of solubility. For the usual temperature range for galvanizing (825 to 900 deg. Fahr.), the rate of solubility is practically constant and the analysis of the steel has but little effect. If the temperature is permitted to reach, say, 950 deg. Fahr. at any part of the tank, the rate of solubility may be as high as 20 times that at 850 deg.

In the case of fuel-fired tanks, the heat source consists of one or more hot spots which are evened out by the circulation of hot gases. Naturally, when the heat source consists of such high temperature spots, there is danger of local over-heating of the tank. This explains the reason for so many failures of fuel-fired tanks at one

or more localized sections, while the remainder of the tank may be in good condition.

## Temperature of Heat Source Low

When electric heat is used, the temperature of the heat source (heating element) is relatively low—approximately 150 deg. Fahr. above the chamber temperature. The heat is applied uniformly throughout the heating chamber, there being no hot spots. Moreover, electric heat readily lends itself to easy automatic control. For very accurate temperature control, a two-point temperature control instrument is used with a thermo-couple inside the tank set at the desired temperature and a thermo-



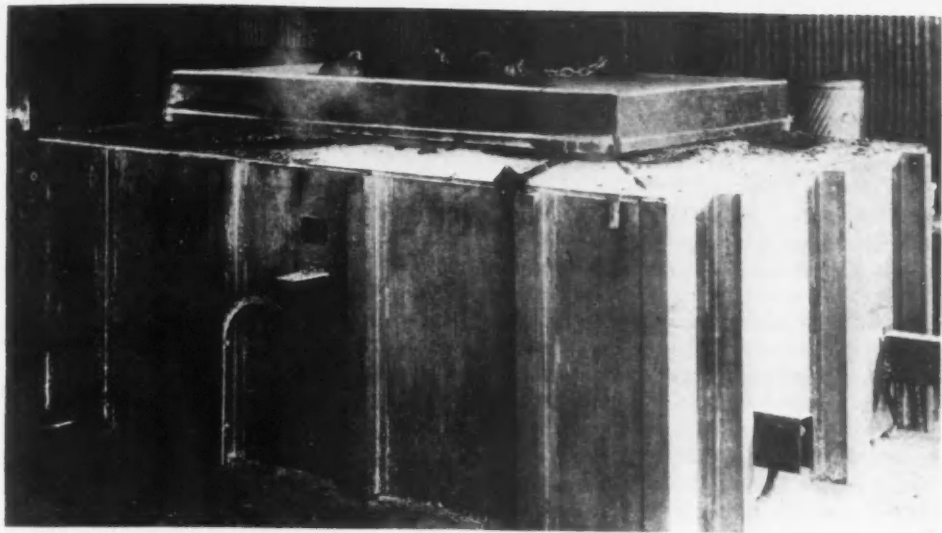
\*Industrial heating engineering department, General Electric Co.



**R**ELATIVE Solubility of Iron in Zinc of Three Different Steels as Determined by E. Diegel, of Julius Pintsch Corporation, Reported in Zeitschrift des Vereines Deutscher Ingenieure, May 1, 1915

\* \* \* \*

**S**TRUCTURAL Steel and Cast Iron Parts Are Galvanized in the Plant of the Delta Star Electric Co., Chicago, in a Tank 36 in. Wide Inside, 36 in. Deep and 15 Ft. Long. It is rated at 194 kw., taking 220-volt 3-phase 60-cycle current



FOR Galvanizing Transmission Line Parts, the Southern California Edison Co., Los Angeles, Uses a 70-kw. 220-Volt Electrically Heated Tank, 5 Ft. Long, 3 Ft. Wide and 3 Ft. Deep

couple in the heating chamber set for the required temperature gradient.

Accurate control of the temperature and uniform temperature throughout the tank insure maximum life for the tank and a minimum amount of dross. The increased tank life, lower dross, and elimination of firing labor result in a substantial reduction in the cost of galvanizing.

In many cases the major portion of the heat for a month's operation is used for maintaining temperature or for supplying stand-by losses. In a fuel-fired tank, the heat losses consist of those through the walls, those from the surface of the zinc, there being no stock losses. Since the walls are well insulated, the largest source of heat loss is that from the surface of the zinc. Since the area of that surface has a large effect on the amount of heat required, the size of the tank should be given careful consideration before an installation is made. For stand-by periods, a well-insulated cover should be used.

In the case of the electrically-heated tank the stand-by losses are those through well-insulated walls and the loss from the surface of the zinc, there being no stock losses. Since the walls are well insulated, the largest source of heat loss is that from the surface of the zinc. Since the area of that surface has a large effect on the amount of heat required, the size of the tank should be given careful consideration before an installation is made. For stand-by periods, a well-insulated cover should be used.

A tank failure usually starts with a slow leak. If this is detected, the tank can be emptied and replaced without damage to the brickwork. In the case of electrically-heated tanks, one or more alarm signal devices are placed in the heating chamber below the tank to detect any leak that may occur.

The device consists of two heat-resisting wires, about 1/4-in. apart, connected to an alarm bell. The brickwork

underneath the tank is so shaped as to accumulate zinc at one or more points where the devices are located. The molten zinc closes the electric alarm bell circuit, thereby warning the operator.

The power consumption of three sizes of electrically-heated tanks operating continuously, as determined by actual tests, is given in the following tables. The figures include the heat required to melt the make-up zinc.

No. 1 Tank—Inside dimensions 30 in. wide, 36 in. deep, 6 ft. long, rated 90 kw., 220 volts, three phase. Galvanizing miscellaneous steel parts at 850 deg. Fahr.

Lb. of Steel Galvanized Per Hr.	Lb. Galvanized Per Kwhr.	Kwhr. Per Ton Galvanized	Cost of Power Per Ton at 1c. Per Kwhr.
500	10.6	188	1.88
1,000	15.6	128	1.28
1,500	18.5	108	1.08

No. 2 Tank—Inside dimensions 36 in. wide, 36 in. deep, 15 ft. long, rated 198 kw., 220 volts, three phase. Galvanizing structural steel parts at 850 deg. Fahr.

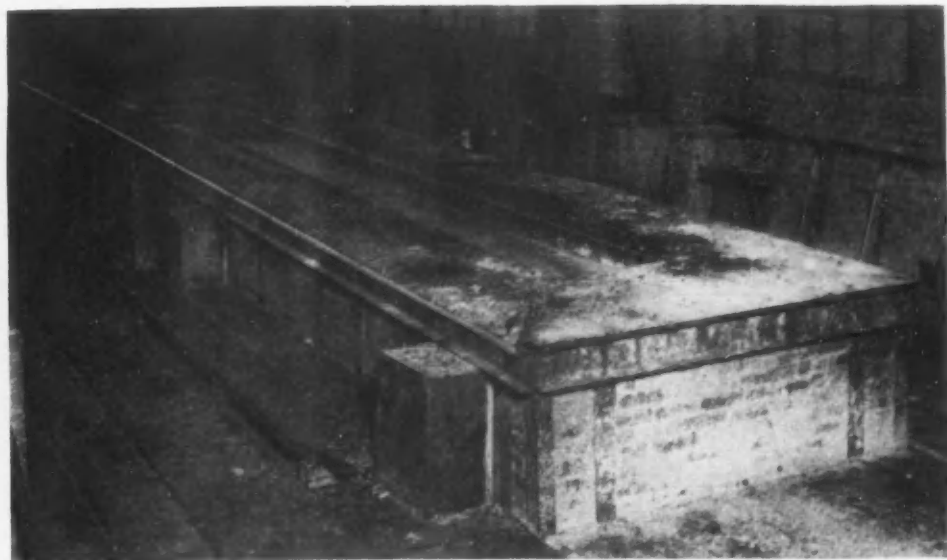
Lb. of Steel Galvanized Per Hr.	Lb. Galvanized Per Kwhr.	Kwhr. Per Ton Galvanized	Cost of Power Per Ton at 1c. Per Kwhr.
2,000	13.5	148	1.48
3,000	16.6	121	1.21
4,000	18.5	108	1.08

No. 3 Tank—Inside dimensions 22 in. wide, 48 in. deep, 30 ft. 6 in. long, rated 405 kw., 220 volts, three phase. Galvanizing structural steel parts.

Lb. of Steel Galvanized Per Hr.	Lb. Galvanized Per Kwhr.	Kwhr. Per Ton Galvanized	Cost of Power Per Ton at 1c. Per Kwhr.
4,000	15.3	130	1.30
6,000	18.4	109	1.09
8,000	20.4	98	0.98

It is easy to calculate accurately the electric power consumption for a galvanizing tank or for any other heating process, since the efficiency of the generation of electric heat is 100 per cent. A complete cost analysis should include the maintenance of all equipment, dross loss, labor, fuel and power consumption and working condition and quality of product.

THE Walter Bates Steel Corporation, Gary, Ind., for Galvanizing Structural Steel Parts, Has an Electric Galvanizing Tank 22 In. Wide, 4 Ft. Deep and 30 Ft. 6 In. Long, Rated at 405 kw. at 220 Volts 3-phase Current





# Aluminum Foundry Makes Use

**W**HAT strides are being made in the use of aluminum sand castings is well shown in a year-old foundry of the Aluminum Co. of America at Fairfield, Conn. Established to take care of Eastern needs particularly, its size, being about 4 acres in extent of floor space, indicates the volume that has developed, in the quest for markets among industries, by emphasis not only on the item of lightness but, through alloying other elements with aluminum, on the availability of intricate castings meeting special physical characteristics. The plant is an outgrowth of one built in Fairfield about 1906. This became the property of the Aluminum Co. of America, and a year ago across from the old plant the new foundry that is the subject of the accompanying illustrations was built.

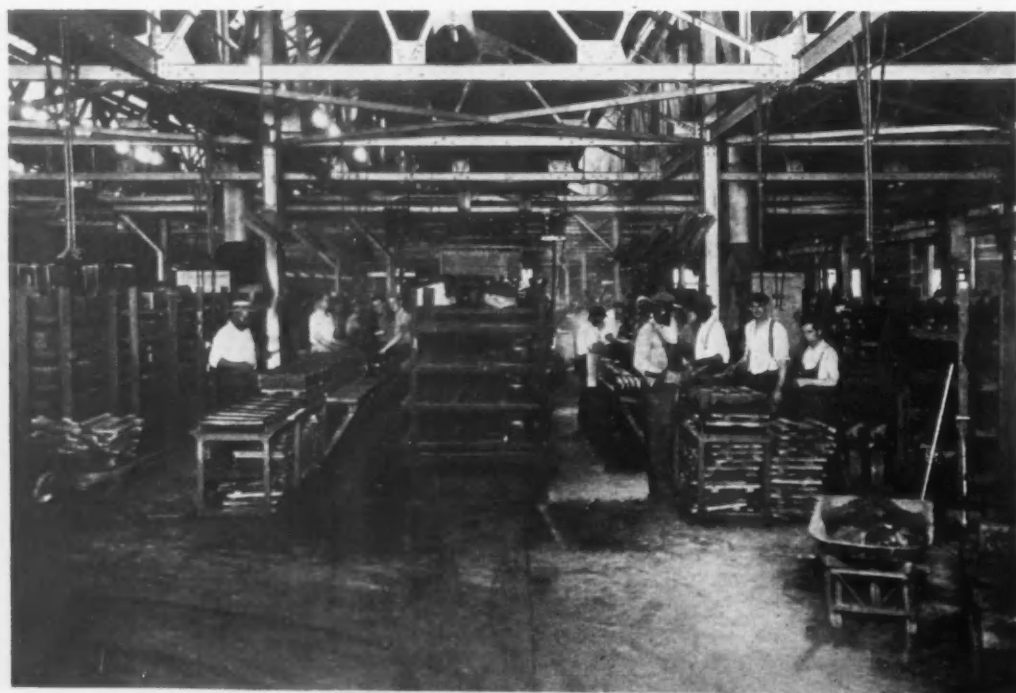
Aircraft and automobiles provide a large outlet but the plant is essentially a jobbing foundry with a few large companies supplying orders which held to make for mass production methods. What is especially noteworthy, however, are these features:

The plant has an X-ray equipment which is constantly in use searching for hidden defects as a means of improving practice and incidentally offering facilities for research which undoubtedly sooner or later will redound to the benefit of the industry as a whole.

Physical, chemical and photomicrographic laboratories form a main part of the plant in that tests are regularly made of samples of the castings of all heats. In conjunction with the X-ray investigation, the foundry is a fact-finding institution of great possibilities.

Pyrometry as a working tool has been made of paramount importance. It is depended on implicitly in the melting of all mixes, in controlling the pouring operations, in the operation of core ovens and, of course, in the heat-treating work.

Working areas are unusually light and airy, advantage having been taken in the design of building to secure facilities that are now available and go to make modern factories pleasant working places.



**M**ANY of the Castings of Intricate Shape Are Made in Dry Sand Molds. They are assembled on roller tables and poured right in the core room, which is immediately adjacent to the bench and floor molding rooms

**I**N the Bench Molding Room, Each Bench Machine Is Backed Up Against a Low Concrete Wall and Is Separated from Its Neighbors by Another Low Wall



# of X-Ray Equipment

Jobbing Plant of Aluminum  
Co. of America at Fairfield,  
Conn., Is Also 100 Per Cent  
Under Pyrometric Control

From an exterior point of view the plant is a pleasing, impressive institution, and in decoration, fixtures and furnishings, a successful effort has been made to show numerous possible applications of aluminum products. The office building of Old Connecticut brick is flanked on each side by wing walls in which are inserted cast aluminum signs with the name of the company and its subsidiary, the United States Aluminum Co., which operates this plant. The main entrance steps have aluminum hand rails. A fence and gates of aluminum alloy inclose the property and to serve as a test of corrosion resistance have not been painted.

All the hardware, which is of Colonial design, is made of an aluminum alloy, this metal being used also for the interior mechanism of the locks, with the sole exception of the springs. All the electrical fixtures, including a large cast hanging lantern in the entrance hall, as well as two others on either side of the front door, are made of the same metal. The stairs to the second floor have alu-

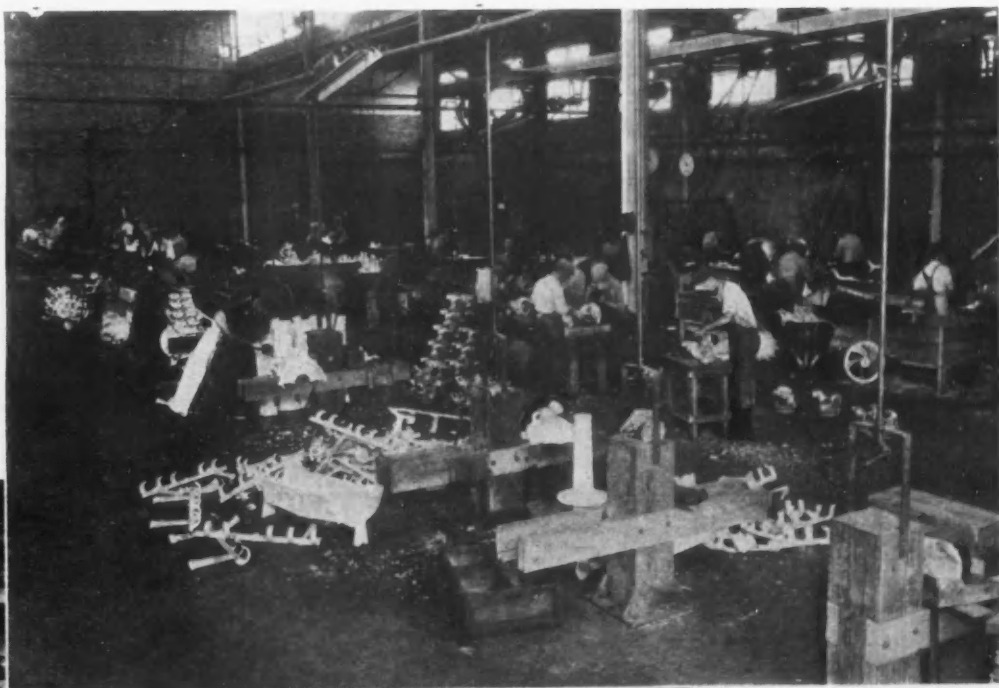
inum treads, as well as rails. Aluminum furniture has been used, and aluminum paint on all exterior and interior trim.

The foundry itself is entered through the melting room, which is 190 ft. long, 70 ft. wide and 33 ft. high. Practically one end of this room opens up by means of rolling doors so that the men in effect are working substantially out of doors.

Melting is done by fuel oil. To each pot furnace is attached a pyrometer, and on the inner side of the room is a large elevated control chamber, where two men are always stationed, checking the temperatures of the metal in the furnaces at all times, to see not only that it is not overheated, but also that the temperatures established by the engineers are maintained. Loud annunciator bells ring as each furnace is ready to be ladled out, an illuminated number overhead on the wall indicating the furnace number.

Adjoining the melting room are the bench and floor

IN the Trimming Room Are Compressed Air Chipping and Other Tools and, as Shown Along the Far Side, a Battery of Grinding Wheels. The compressed air lines and special saddles for holding the work are shown



THE Dry Sand  
Molds, as They  
Are Progressively  
Built Up by the  
Insertion of Vari-  
ous Cores, Are  
Moved Along a  
Roller Table to a  
Pouring Space Ad-  
jacent to Which  
Are Located Elec-  
tric Holding Fur-  
naces

molding rooms, 60 x 150 ft. and 95 x 250 ft. respectively. The floor molding department is served by seven 1-ton, one 3-ton and one 5-ton cranes; has a monitor type roof with glass sides in the monitors, as well as large windows in the sidewalls.

The roof over the bench molding room is of sawtooth construction, and here each bench machine is backed up against a low concrete wall, and is separated from its neighbors by another low wall, which is topped by a 12-in. steel channel, making an unusually clean layout. Placed throughout both of these departments are pyrometers, so that all castings are poured at the correct temperature. Technical assistants are on duty at all times to see not only that temperatures of melting and pouring are as specified, but also that the rate of pouring is correct.

On one side of the bench foundry are rows of concrete bins where both molding and core sand are received from the cars on the company's private siding and delivered by electric truck to the molding floors.

The core room is immediately adjacent to both these rooms and is 110 x 150 ft. in plan. Here is a battery of seven oil-fired two-rack ovens, with one smaller tray oven. Pyrometers are attached to each oven and a check kept of them at all times. An additional battery of ovens is now being installed.

Many castings, on account of their intricate shape, are made entirely in dry sand molds. These are poured right in the core room. The metal which is melted in the melting room is transferred to electric holding furnaces in the core room. The transfer is made at as low a temperature as feasible and the temperature is brought up to pouring temperature in these holding furnaces, thus preventing any soaking at elevated temperatures.

In this department some of the molds, as for airplane cylinders, are assembled as respects their various cores by passage along a roller table. The cores are inserted from station to station along the roller table, jigs being employed for accurate setting and the mud paste used in setting is dried by hand torches. The particular casting mentioned has a full fin outside air cooling surface and requires in the molding a generous use of wires for molding sand support. At the end of the roller table the mold is ready for the pouring. The freshly poured mold is carried to a point near the shaking-out room, where it is allowed to cool in its sand a matter of two days.

The shakeout or knockout room, where the core sand and wires are removed from the castings, partly by vibrating air tools, is next to the cleaning room. Here, in addition to the standard equipment seen in similar establishments, are rows of benches, where operators, using rotary files, finish the rough cleaning of the castings before they are sand-blasted. In cleaning the spaces between the closely set ribs or fins of the airplane cylinder castings, the rotary files are driven by flexible shafting in flexible tubes easily handled by the operators. The rake of the cutting teeth of these files or milling cutters, which are of various shapes to accommodate the needs of the case, is such that the softer aluminum has no great tendency to pile up or clog up the file.

The inspection room, 80 x 100 ft., has besides the regular inspection benches tanks for pressure testing, accurate layout tables, and all the tools needed for the close inspection demanded on account of the accurate dimensional as well as physical and chemical specifications of the product of the foundry.

An overhead monorail runs along one side of this room. Beneath it are placed in baskets the castings that are to be

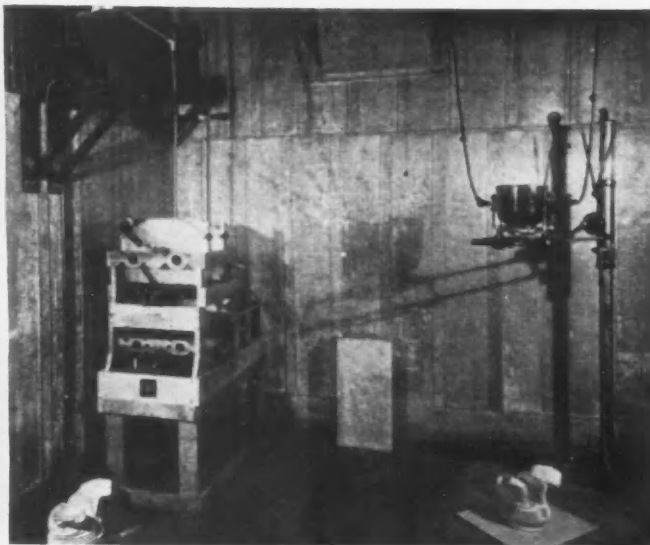
## INSPECTION

Includes Extensive Calipering of Wall Thicknesses, Hammer Tapping on All Surfaces at All Accessible for Discovering Hollowness by Sound (in Such Castings as Those of Rolls-Royce Engines Shown) and Hydrostatic Tests



THE Heat-Treating Equipment Includes Electric Furnaces and Quenching Tanks Here Shown Covered





THE X-Ray Equipment Has Been Used to Penetrate Thickness of Over 10 In. The interior view of the room, which is lead lined, shows an x-ray examination in progress of an airplane cylinder, while at the left of the entrance door may be seen the control apparatus in the ante-room

heat treated. A traveling crane takes these baskets to the heat treating room. Here one electric furnace has been running for some time, while another and larger one, 12 ft. long, 6 ft. high and 6 ft. wide, will soon be installed. In this room also are the steam aging tanks as well as the quenching tanks likewise pyrometrically controlled.

After heat treatment, the castings are returned to the inspection room for final inspection, whence they are taken to the adjacent room for shipment by railroad through one of the six doors which open on the private siding, or by motor truck through the two large doors on the end.

The laboratories of the plant cover chemical and physical work and photo-microscopic studies, but also the X-ray department, where a check is kept on the castings being made to insure soundness and freedom from hidden de-

fects. Test specimens from every heat poured are analyzed and test bars are pulled. A check is likewise made on all incoming raw material.

The foundry has also wash and locker rooms, which include individual shower baths. The employees come and go through the bright and airy locker room and this fact has its effect, it is believed, upon their doing their share in keeping the foundry clean.

The pattern vault is a large building, 35 x 80 ft., fire-proof, of vault construction, arranged so that the temperature is controlled at all times to keep the 5000 patterns arranged on the floors and racks under substantially ideal conditions. Immediately adjoining this is a carpenter and maintenance building, for the building of flasks and the proper maintenance of patterns and equipment.

## Rust-Proofing Steel and Aluminum Aircraft Parts



**A**NODIC oxidation is a process for the protection of the surface of aluminum and its alloys by the formation of an adhered film of oxide on the surface.

Of the materials used on the British airship R-101, only two are aluminum alloys, viz., the aluminum-silicon alloy die castings and the duralumin in form of sections, close jointed tubes, solid drawn tubes, stampings, rivets and screw-machine parts.

The aluminum-silicon alloy as die cast has such excellent resistance to corrosion that anodic oxidation is unnecessary. All the duralumin parts, from tiny rivets to solid drawn tubes 2½ in. diameter and 30 ft. long, however, have been given a film of oxide and a coating of lanoline. The operation of the process requires the closest control of

- (1) Loading of the plant for current density. This varies with
  - (a) The composition of the alloy
  - (b) The state of the surface, i.e., whether machined, stamped and pickled or rolled
- (2) Rate of voltage rise
- (3) The duration of the "soak" at the "film forming voltage" (40 volts)
- (4) Concentration of the electrolyte (chromic acid) in the bath

This process has proved an invaluable inspection agent in dealing with duralumin parts. The process of anodic oxidation, by exercising selective attack on faulty places, reveals at once localities of flaw or segregation which were masked to ordinary inspection.

Steel members of the airship R-101, which are not made of stainless steel, are treated by a rust-proofing process which is best described as closely controlled Sherardising.

Uniform results can be obtained by this well-known process only by close control of

- (1) Density of loading of work into the drums
- (2) Composition, within close limits, of the mixture of zinc and zinc oxide dust
- (3) Rate of increase of temperature
- (4) The maximum temperature and the time of soak at maximum temperature

It has been found possible to control the thickness of coating within very close limits, so that it is safe to count upon an increase in dimensions due to the addition of a coating of thickness always lying between 0.0003 and 0.0006 in.

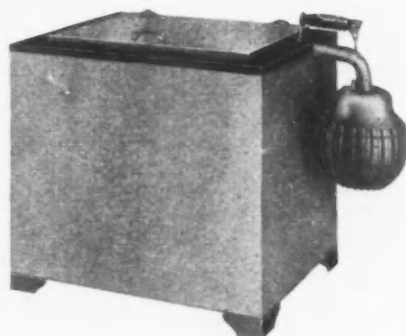
It has been established to the satisfaction of Boulton & Paul, the makers of this airship, that this rust-proofing is superior to electro deposition of zinc. The coat, it is emphasized, is well alloyed to the steel and is non-porous to the ordinary tests, and the ferroxyl test modified to suit the special requirements.

The process, properly and closely controlled, is an eminently satisfactory one, and among the many thousands of steel stampings and tubes which have been treated, the rejected parts sent back for re-treatment have not totalled a hundred.

# Gas-Fired Ice Box



Simplified Domestic Refrigerator Unit Made of Sheet Metal and Tubing, Welded into Closed System, Tested at 600 Lb. Per Square Inch



BY J. B. NEALEY\*

**S**IMPLIFICATION in design and mass production are the great forces that are putting the erstwhile luxuries of the rich into the hands of everyone. The brief history of mechanical refrigeration may be taken as an example. First the electric refrigerator appeared and attained wide popularity. Then came the gas refrigerator, made in one piece and without movable parts. Now we have the "poor man's refrigerator" known as the Icyball. It is as simple as a tea kettle, and it utilizes the cook stove to keep a food compartment cold.

This bizarre result is effected by the same principles of alternate evaporation and condensation of a volatile liquid, described in detail in *THE IRON AGE* for Feb. 2, 1928, when applied to a gas refrigerator. In the more expensive varieties there described, this circulation of the refrigerant was constant, and the unit could be built permanently into a cabinet. In the simpler variety now to be described the action is intermittent—the housewife

puts the 35-lb. unit on her stove for a short time in the morning, then replaces it in the refrigerator. The cost of gas for each heating is less than two cents, and for the next 24 hours the Icyball will freeze ice cubes, desserts or salads, in addition to keeping the food compartment cold and dry.

The Icyball consists of two round chambers connected with a length of bent pipe, and equipped with a handle by which to carry it about.

The ball with the fins is called the hot ball and the other the cold ball. These two with their connecting tube are tightly sealed so that the ammonia solution contained inside cannot escape. The device is a product of the laboratories of the Crosley Radio Corporation, Cincinnati, and is being manufactured in a separate plant of this concern.

To start operation, the unit is lifted from the cabinet and stood in such a position that all of the liquid drains into the hot ball. The hot ball is then placed over a



Unit Complete Except for Minor Attachments Is Galvanized in Gas-Fired Zinc Bath

burner of the kitchen stove, and the cold ball into an adjoining pail of cold water for about 90 min. This separates the ammonia gas from the solution, the former being driven into the cold ball, where it condenses. A little whistle blows when the evaporating process nears completion. Then the hot ball is cooled in the pail of water, the liquid ammonia in the cold ball commences to evaporate, it quickly drops to zero or below, and the unit is ready to replace in the refrigerator cabinet.

A separate unit known as a "stabilizer" keeps the cabinet cold while the Icyball is on the stove. This consists merely of a small sealed tank, containing about 14 lb. of glycerin solution, with a depression in the top in which the cold ball rests.

#### Unit Made of Welded Stampings

The manufacture of the Icyball progresses in a straight line; most of the handling of parts and sub-assemblies is done by continuous traveling or gravity conveyors.

Each of the balls is made of two hemispheres (steel stampings made in a single press operation) welded together with an oxy-acetylene flame. One ball is 10 in. diameter and the other 9½ in., while the connecting tube is 1¼ in. seamless steel tubing. The steam dome to make a liquid seal on the top of the hot ball is also a steel stamping with a bottom diameter of 7 in.

In the manufacturing department, gas welding stations are ranged alongside gravity conveyors, one main conveyor for each ball. Operators are specialists, welding one seam or attaching one part. Where these two conveyor lines meet, the balls are welded to the connecting tube and the unit passed along to the hydraulic test. A large acetylene generator for the oxy-acetylene welding has been erected in a fireproof room adjacent to the assembly lines; gas is piped through the plants at low pressure and each blowpipe outlet is protected by a hydraulic back-pressure valve.

Oxygen is furnished in individual cylinders, each with a regulator so that pressure can be adjusted appropriate for the thickness of the metal being welded.

The hydraulic test is so arranged that five units are connected to a header at one time and all are subjected to 600 lb. pressure. The strength of the welds and materials having thus been checked, the units are then tested with 200 pounds of air pressure to locate any pin hole leaks. Pressure in the system when in a refrigerator cabinet is about 20 lb. per sq. in.; during the heating period the temperature goes up to 300 deg. Fahr., and pressure to 230 lb., before the whistle blows.

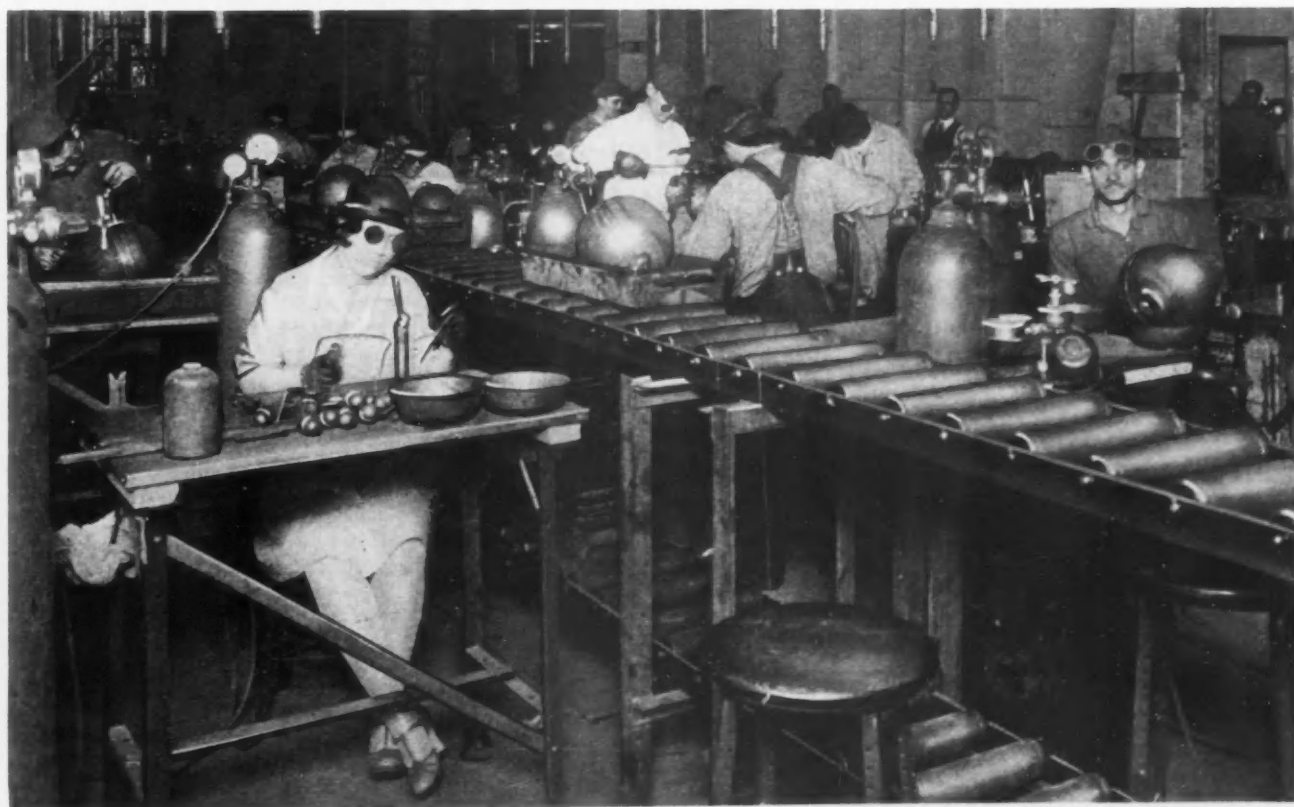
To improve the radiation rate of the hot ball a number of fins made of strip steel stampings are spaced about it and clamped securely in a jig while binding them on with wire. The units are then conveyed to the galvanizing department.

#### Finish in Zinc Coat and Aluminum Paint

They are pickled and washed in a series of large vats. Galvanizing is then done in three boiler steel tanks five feet long, three feet wide and 30 in. deep. A 3-in. space between brick setting and tank allows the circulation of heat, the gas flames impinging on the bottom. Automatic controls maintain the temperature at 850 deg. Fahr. plus or minus five degrees. From 1½ to 1¾ lb. of zinc is used on each unit; the zinc coating also acts to solder on the fins, and to prepare other surfaces for soldering by hand.

An overhead monorail system serves the galvanizing department. The figure shows a fixture whereby the units are forced into the molten zinc. The half of the zinc bath in the foreground is covered with three inches of sal ammoniac flux. After the unit has been immersed about 90 sec. it is pushed along, still immersed, to the other end of the tank where there is no flux, and removed.

Units are next moved by conveyor to a battery of drill presses where openings for safety devices are made. All



Various Parts, Stamped or Bent from Strip or Tubing, Are Assembled in Simple Work-Holding Devices and Welded with Oxy-Acetylene Blowpipes





Part of Test Floor—Several Hundred Starting Units, Each One a Gas Plate and Water Pail, Required to Keep Pace with Production

fixtures are then soldered on, and the unit tested under 300-lb. pressure.

#### Ammonia Charged in Separate Room

A weighed amount of ammonia is next charged. This is done in a separate room, through a system of special piping leading from vacuum pumps and ammonia reservoirs. The aqua-ammonia is mixed in four high-pressure tanks, which are located on a floor above. While two

of the tanks are draining, the other two are being refilled.

As soon as the units have been charged they are taken by conveyor to the second floor where each one is put through a complete test cycle, including heating and placing them in test boxes for 24 hr. in a room where a constant temperature of 90 deg. F. is automatically maintained. The units are then sprayed with aluminum paint, packed and dropped to the shipping department through chutes.

## European Irons for Enamelware

**A**N article by Engineer A. Muller published in *La Revue de Fonderie Moderne* (June 10, 1929) gives some details regarding the production of iron destined for the manufacture of enamelware. As a rule these manufacturers do not attempt an exact chemical composition for the castings, and consequently the majority of them do not possess analytical laboratories. They endeavor to produce iron which is fluid, soft, easy to work, and, above all, free from defects while in the oven.

#### Iron Containing No Free Carbon Enamels Satisfactorily

Frequently insufficient attention is given to the physical reactions which take place between the iron and the enamel. These two materials differ widely in their characteristic properties, and often the faults which arise with one are attributed to the other. Thus, an iron containing no free carbon may be enameled satisfactorily, and without a preparatory coating; carbon plays an important part in reducing the oxides contained in the enamel—it causes the enamel to become transparent, uneven, and otherwise defective. Oxide of zinc is particularly affected by graphitic carbon; therefore certain enamels cannot be applied directly to the iron, and necessitate a preliminary coat.

Great care is therefore taken to make sure that the

carbon is not excessive; 3.6 per cent is a satisfactory proportion, and 3.7 per cent is the limit. For the same reason the use of carbonaceous material, such as charcoal, is avoided in the molding materials. For thin castings phosphorus should not be less than 0.6 per cent nor more than 0.9 per cent; if phosphorus is too high the metal becomes so brittle that trouble is likely to occur during baking. An excess of phosphorus may be overcome by an increase in silicon, but the latter should not exceed 3.25 per cent. Sulphur is probably the most dangerous element, as beyond 0.09 per cent it causes the iron to be hard and brittle. The interplay of the various common elements, the one balancing the other, is illustrated by the following analyses, any of which will make satisfactory pieces intended for enameling:

Sulphur .....	0.07	0.08	0.09	0.10
Silicon .....	2.3	2.4	2.5	2.6
Total carbon .....	3.72	3.7	3.65	3.6
Graphitic carbon .....	3.26	3.27	3.28	3.29
Manganese .....	0.6	0.7	0.8	0.9
Phosphorus .....	0.9	0.8	0.7	0.6

Castings must not remain too long in the sand as small stains of rust may thus be produced, and although almost imperceptible, they reduce the quality and adherence of the enamel.

# Trade Practice Meetings of 62 Industries

## Pamphlet Covering Conferences Published By Trade Commission—Codes Reflect Rising Standards

WASHINGTON, Aug. 13.—The Federal Trade Commission is having a pamphlet on trade practice conferences printed and is seeking the cooperation of trade associations and other organizations for its distribution. Copies will be available at 25c. each, from the Superintendent of Documents, Washington.

The pamphlet will cover 52 conferences. Since it went to press, however, 16 additional conferences have been held, making a total of 68. The number of industries affected is 62, some having held conferences twice. Rules have been issued in all but four or five instances, and between 25 and 30 applications for conferences are pending. The industries cover a wide range with a huge total capitalization, doing business under standards upon which they voluntarily agreed and which they set up in cooperation with the commission. That they are living up to the codes established is evidenced by the fact, pointed out to THE IRON AGE by M. Markham Flannery, director of the Trade Practice Division, that less than one dozen cease and desist orders were issued for the violation of the 400 rules promulgated by the commission. He expressed the view that the outstanding result of the conferences has been to put business on an equal basis, fair to all alike, including the consumer.

"These conferences," said Mr. Flannery, "mean big savings to industry, the Government and the people by settling in groups many cases which under former practice would have had to be settled individually. Also they have placed industry and business in a friendly attitude rather than in an attitude of antagonism."

It is the opinion of Mr. Flannery that a remarkable transformation has come over business within the past decade, and that this has been emphasized in trade practice conferences. The point was made by Mr. Flannery that business and industry are anxious to operate on high standards, and, when assured that codes may be set up that place each unit on a fair comparative level, they take action to do away with undesirable practices. The growing number of conferences and of affected industries is held to support this view. Previous to the setting up of the Trade Practice Division in June, 1926, the commission held only two or three conferences a year. Now the average is more than 20 each year, and it is rising. In May of the present year there were six conferences, in June, 11, and in September there will be perhaps eight or 10, none being held during July and the present month, owing to the fact that the commission is not in session.

The first trade practice conference was held in 1919, and concerned the creamery industry of the West, de-

veloping from an investigation under the old system of individual complaints and bringing about cooperation instead of hostility. It is estimated that the elimination of some practices by the creamery industry, such as providing free service, has saved it millions of dollars. Industries in the iron and steel and metal-working lines, it is claimed, also have saved large sums as the result of codes they have adopted under the trade practice rules. There are two sets of rules, Group I and Group II. The former condemn practices that are plainly illegal. Group II rules cover practices that may or may not be illegal. The commission gives no opinion one way or the other regarding such rules, but accepts them as expressions of the trade concerned. The legality or illegality of such rules can be determined only after investigation of individual cases. Some of the practices condemned under Group II rules are, on the other hand, manifestly legal, but are held by those participating in the conferences to be undesirable.

## Reinforcing Institute Meeting

The Concrete Reinforcing Steel Institute will hold its next semi-annual meeting Sept. 30 to Oct. 2, at the Wawasee Hotel, Wawasee, Ind. The opening session will be held Monday evening, Sept. 30. The Wednesday morning session will be devoted primarily to the subject of concrete rib floor construction.

## New Indiana Company Takes Over Two Plants

Properties of the Chrobaltic Tool Co. and of the Sheet Steel Products Co., both located at Michigan City, Ind., have been taken over by the Michiana Products Corporation of the same city, recently organized. This new company will continue the business and enlarge the facilities of the two absorbed companies. The present operating and sales organizations will be maintained with the exception that R. O. Gill has resigned to engage in a new business.

The Chrobaltic division of the new company will continue to manufacture heat and acid-resisting alloy castings and other stainless materials. An additional foundry was recently completed and the engineering department increased. The Sheet Steel Products division will continue to manufacture the Hall Winslow line of oil filters and air cleaners for truck, tractor, aeroplane and automobile engines, as well as pressed metal parts, tanks, equipment, etc., in standard

special analyses and corrosive-resisting materials.

O. M. Carry is president of the Michiana Products Corporation with offices in Chicago, and W. B. Sullivan is vice-president and general manager, located at the plants in Michigan City.

## Sheet Steel Used in Making Electric Portable Tools

The use of sheet steel stampings in the manufacture of electric portable tools is described in the current issue of "Making Markets," published by the Sheet Steel Trade Extension Committee. Speed Way Mfg. Co., Cicero, Ill., has found that tools fabricated with sheet steel casings are more compact than those made of other materials. Sixteen-gage sheets are used for heavy-duty tools and 22-gage for light-duty. The strength of steel makes the tools especially serviceable where rough handling is involved.

## Plant Visitations During Metal Congress

An extensive plant inspection program has been arranged for the National Metal Congress to be held in Cleveland the week of Sept. 9, under the auspices of the American Society for Steel Treating. The schedule provides for a majority of the plant inspections in the mornings, so that the afternoons will be free to attend the National Metal Exposition at which over 250 exhibitors will occupy 80,000 sq. ft. in Cleveland's Public Auditorium. Plant inspections are scheduled as follows:

National Tool Co.  
Lamson & Sessions Co.  
Otis Steel Co.  
Case School of Applied Science.  
Industrial Brownhoist Corporation.  
Columbia Axle Co.  
Lakeside Steel Improvement Co.  
White Motor Co.  
Warner & Swasey Co.  
Burdett Oxygen Co. of Cleveland.  
Joseph T. Ryerson & Sons, Inc.  
Lincoln Electric Co.  
Vlehek Tool Co.  
Gears and Forgings, Inc.  
Eaton Axle & Spring Co., bumper division.  
Ferro Machine & Foundry Co.  
National Malleable & Steel Castings Co.  
American Steel & Wire Co., Cuyahoga Works.  
Nela Park.  
National Acme Co.  
Hupp Motor Car Corporation.  
Great Lakes Aircraft Corporation.  
Cleveland Tractor Co.

## Wheel Plant in Mexico

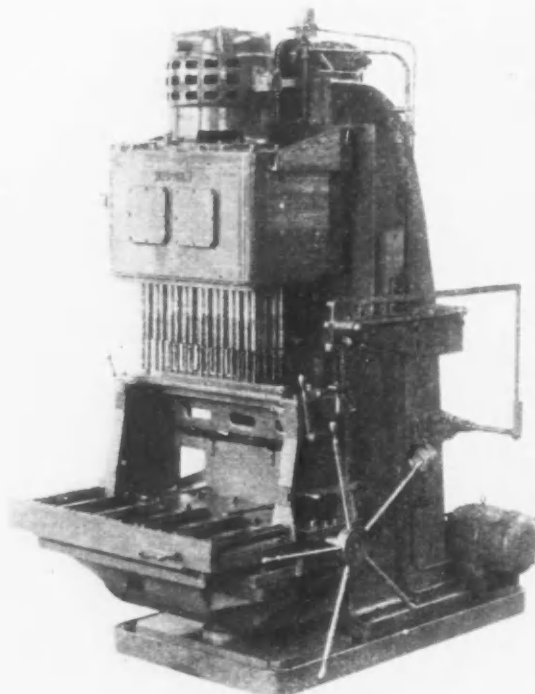
Construction of a plant for the production of wheels for railroad, street car and mining use has been completed by the Monterrey Iron & Steel Co., Monterrey, Mexico, and operations will begin in the next month. Contracts for wheels have been closed with Mexican railroads.

## Multiple-Spindle Machine for Valve Holes

THE valve hole drilling, reaming, counterboring and spot facing machine illustrated, built recently by the Defiance Machine Works, Defiance, Ohio, is equipped with Oilgear

The table of the machine is adjustable and has screw jack supports for overhang. It extends beyond the front of the machine and is fitted with rollers to connect it with conveyor tables for

THE Fixed-Center Head Can Be Furnished with Spindles to Suit Requirements in Drilling, Reaming, Counterboring and Spot Facing Valve Holes in Automobile and Tractor Cylinder Blocks. Feed is by means of Oil-gear mechanism



hydraulic feed and a fixed-center direct-motor-driven head. The head is furnished with different numbers of spindles to suit requirements. All spindles are made of heat-treated alloy steel and are equipped with heat-treated helical gears. Wherever possible ball thrust bearings are employed. The heads are entirely inclosed and furnished with forced feed lubrication.

Oilgear feed permits close adjustment of feed rates to suit requirements and provides rapid traverse movement both to and from the work.

passing the blocks from one machine to another. The column is a heavy cored casting; it supports the Oilgear cylinders and also incloses the weights that counterbalance the heads. Fixtures, built to suit requirements, may be rigid or of sliding type with bushing plates and hardened jig eyes.

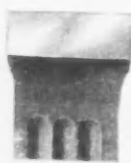
A 15 to 20-hp. 1200-r.p.m. motor is recommended for driving the head and a 2-hp. 900-r.p.m. motor for driving the Oilgear hydraulic pump. The floor space occupied by the machine is 64 x 108 in. The net weight is 18,500 lb.

## Tool Holder for Large Lathes and Planers

RIGID support and convenient interchangeability of tool bits are features of the Lindmark tool-holder illustrated, which is being supplied by the Apex Tool Co., 50 Remer Avenue, Bridgeport, Conn., for use on boring mills, planers and heavy-duty lathes.

The tool bit has a broad bearing in the holder and is locked firmly in place by tightening the socket set

screw, which causes the bit to slide over the beveled surface A of the holder, lock against the shoulder B and make contact with the forward part of the holder at C. The support is thus extended close to the cutting edge, most of the cutting strain being transmitted to the holder at C, and very little to the set-screw. It is stated that because of the firm sup-



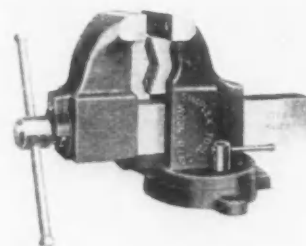
With the Support Close to the Cutting Edge, Stellite Bits May Be Used. Grooves, shown in the square and hognose bits above, permit offsetting to compensate for wear

port provided, which is claimed approach that of a solid tool, Stellite tool bits may be used without danger of breakage. The grooves in the bits permit offsetting, to compensate for wear of the cutting edges. The bits may be removed conveniently for regrinding and replaced in exactly the same position without removing the holder from the machine.

The holder is a chrome-nickel steel drop forging, heat-treated to provide maximum toughness. It is stocked in two sizes, 1 x 1 1/4 x 6 in. and 1 1/4 x 1 1/2 x 8 in., respectively, and in five styles: Straight, right and left-hand 45-deg. offset; and right and left-hand 90-deg. offset. High-speed steel tool bits are made in two sizes and in the following seven styles: Square nose, right and left-hand hog nose, right and left-hand side facing, and right and left-hand roughing. The Stellite bits, cast special for use in these holders, are furnished in right and left-hand hog nose and right and left-hand roughing styles only. Gooseneck and other type planer holders in 1-in. and 1 1/4-in. widths can be furnished on order.

## Combination Vise Equipped with Steel Slide

A COMBINATION pipe vise having a steel slide has been added to the line of the Simplex Tool Co., Woonsocket, R. I. The steel slide eliminates the possibility of breakage just back



The Steel Slide Eliminates Breakage Back of the Front Jaw

of the front jaw, and is particularly desirable for this type of vise the jaw of which is extra high.

The pipe jaws are made of hardened tool steel and are reversible. The jaw inserts are also made of hardened steel and are fastened with screws and doweled to prevent loosening. The nut in the back jaw through which the operating screw goes is made of malleable iron, and is designed to eliminate lifting up at the back and so prevent breakage of this part. It is extra long and has two front supports, one above the other.

The property of the Penn-Seaboard Steel Corporation, New Castle, Del., is to be sold following a petition of the receivers of the corporation, Alexander F. Crighton and William P. Barba, provided creditors show no reason prior to Sept. 4 that such a sale should not be held.



## Improved Nut and Screw Driving Machine

**S**PEED of operation, as compared to hand methods, and uniform tightening to predetermined standards are

features of an improved model of the Reynolds nut driving machine which has been placed on the market by the Baush Machine Tool Co., Springfield, Mass.

The machine was formerly built by the Metalwood Mfg. Co., Detroit, and was described in *THE IRON AGE* of Dec. 8, 1927. It has two spindles, one of which is mounted in a slide that is adjustable crossways of the column to permit varying the spindle center distance from 2 1/16 to 6 in., to suit the piece being assembled. A detachable socket wrench at the lower end of each spindle holds the nuts or cap screws through magnetic windings. The driving operation is controlled by foot lever and the tightness of the nuts or screws is determined by the adjustment of a rheostat. When the nuts or screws are driven to the predetermined tightness, the clutch circuit is caused to open automatically, which, when the foot lever is released, permits the work to be withdrawn from the wrenches. The arrangement is such that if one nut begins to tighten before the other, the leading nut will be slowed down until both nuts are equally tight.

Substitution of a centrifugal mechanism for making and breaking the magnetic clutch circuit through a mercury switch in place of the epicyclic mechanism previously employed is a major improvement. The electric circuit has been simplified and a more substantial switch provided. A direct current generator can be supplied where direct current is not otherwise available.

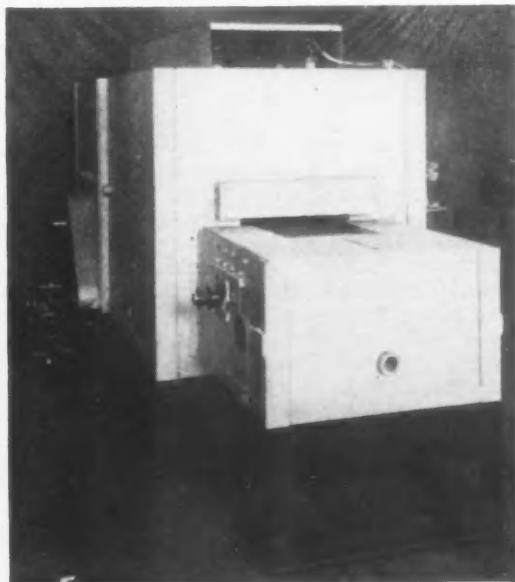


Nuts and Cap Screws Are Driven Rapidly to Predetermined Tightness. Control is by foot lever

## Small Part Heat-Treating Furnace

**A** NEW electric furnace for heat treating small parts is announced by the General Electric Co. It is of the mesh-belt conveyor type, and the automatic feed and discharge effects the labor savings.

The furnace is about 8 ft. long, 4 ft. wide and 4 1/2 ft. high overall. A small heat-insulated housing is provided for the feed end of the belt to prevent unnecessary losses. The principal feature of the furnace is the mesh-belt



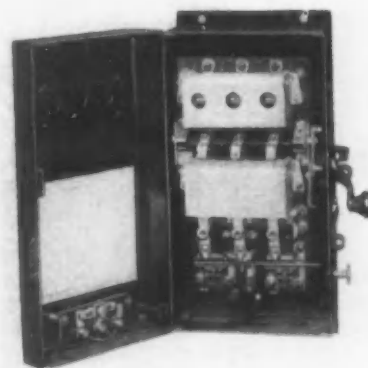
**A**UTOMATIC Feed and Discharge Is a Feature of This Mesh-Belt Conveyor Type Electric Furnace. Both belt speed and temperature are adjustable and opening at the feed end may be of size to suit the work

conveyor, made of heat-resisting alloy. The mesh belt is carried over two drums of the heat-resisting alloy, one of which is driven by motor.

The furnace can be adjusted for various speeds and temperatures, and an adjustable opening at the feed end accommodates work of different dimensions. After heat treating the work is discharged into a chute which may carry it to a box, quenching bath or some other subsequent process. To start the furnace in operation, the control is set for the desired temperature, and the speed is adjusted. The furnace will handle up to 300 lb. per hour, in shapes up to 2 x 16 in. overall.

## New Automatic Motor Starter

**S**AVINGS in wiring costs are among the advantages claimed for a new combination automatic starter which is being manufactured by the Square D Co., Detroit, in three capacities and six types. Across-the-line starters up to 30 hp., 220 volts and 50 hp., 440 and 550 volts, two or three-phase, are



An Across-the-Line Starter and Motor Circuit Switch Are Mounted in the Same Cabinet

employed, the starter being mounted with the motor circuit switch in one cabinet. The motor circuit switch acts not only as a disconnecting switch but is also capable of opening the circuit while the motor is under load.

To facilitate obtaining accurate working load data, the starter is arranged that a test jack may be inserted in the motor circuit while the motor is running. This test jack is put through openings in the door of the cabinet and is held firmly between the jaws of the switch by spring tension. The device may be provided with fuse blocks between the motor circuit switch and the starter, if desired.

Sixteen stoves are to be installed at the Lackawanna plant of the Bethlehem Steel Co. by the American Heat Economy Bureau Inc., Pittsburgh.

# Holding Company to Be Dominant in Coke

## New England Corporation Formed by Koppers Interests— Controls Many Properties

THE Koppers interests, Pittsburgh, have filed with the Massachusetts Commissioner of Corporations a voluntary trust, the Eastern Gas & Fuel Associates, with Charles A. Coolidge, Jr., and Paul C. Cabot, both of Boston, and Thomas J. Michie, Jr., Pittsburgh, included in the trustees. Headquarters will be in Boston.

Under the declaration, trustees are given broad powers. In addition to the investment trust with respect to securities, the trustees have the power to manufacture, produce, purchase, mine and otherwise acquire, hold, own, use, sell and otherwise dispose of and deal in gas, coke, oil, tar, chemicals, iron, steel and other metals.

Authorized shares in this voluntary trust, which may be issued from time to time at the discretion of the trustees, include 250,000 shares of prior preference, \$100 par stock, paying 4½ per cent cumulative dividends; 1,000,000 shares of \$100 par preferred, paying not more than 7 per cent in dividends; and 2,000,000 shares of no-par common stock. The

prior preference stock, in the case of liquidation, is entitled to \$105 per share, and the preferred stock \$115.

The Koppers interests already have in operation a modern coke-making plant at New Haven, Conn., and are a factor in the Connecticut gas and coke field. Although no official announcement has been made by the Koppers interests, Boston banks report that they have acquired control of the Massachusetts Gas Companies, embracing the Mystic Iron Works, coal properties in the South, coke ovens located at Everett, Mass., steamships and valuable franchises in and about Boston as to the distribution of gas.

Assuming that the Koppers interests have acquired the Massachusetts Gas Companies, it is generally conceded that, with valuable properties in northern New York State, and with the acquisition of gas and lighting properties south of Boston, they will have a dominant position in the New England gas and coke market, except in the Providence, R. I., district.

zone lies to the west and includes most of eastern Kansas, southeastern Nebraska and the area east of a line from Sioux City, Iowa, through Mitchell and Aberdeen, S. D., and Fargo and Grand Forks, N. D., to Duluth. The highest rated zone includes that part of the territory west and north of the intermediate zone. It covers the Rocky Mountain part of the territory.

For application between points in the lowest rated zone the examiners recommended that a distance scale of rates nearly 83 per cent of the scale prescribed for Oklahoma and other Southwestern States in the Consolidated Southwestern cases. The scale recommended for the intermediate zone is the same as the Kansas-Missouri scale prescribed for southwestern Missouri and eastern Kansas in that case. The highest scale is identical with the Southwestern scale. For application between points in different zones the examiners recommended that the lower or lowest scale be applied for the entire distance, plus differentials for the distances in the higher rated zones. The measure and progression of the scales are briefly indicated by the first class rates below:

Miles	Scale I	Scale II	Scale III
5	32	33	36
100	66	73	79
200	91	101	109
300	109	124	133
400	127	146	157
500	142	162	174
800	187	211	227
900	198	223	240
1,500	264	296	318

## Increases in Western Rate Revision

### Examiners' Report Recommends New Class for Iron and Steel Products in Western Trunk Line Territory

WASHINGTON, Aug. 13.—Freight charges on iron and steel products moving on class rates in Western Trunk Line territory will be increased if the Interstate Commerce Commission adopts the recommendations submitted to it by William L. Koebel and Peter C. Paulson, examiners, in what is known as the Hoch-Smith Western class rate investigation. The proposals of the examiners do not affect commodity rates.

The proposed report, which was made public on Wednesday of last week, recommended that a new class be created for iron and steel articles in Western Trunk Line territory. At present, iron and steel products, when moving on class rates, are rated fifth class, which is about 40 per cent of first class. The examiners proposed that special treatment be given to iron and steel products to the extent of having set up for them a class (not designated by name or number) equal to 32.5 per cent of the first class scale that they recommend for application to the territory affected. The minimum carload would remain at 36,000 lb.

When the new scale in the Western Trunk Line territory goes into effect by the commission's decision, it will be of such a character as to fit in with the new rates on iron and steel in Official Classification territory, which are to become effective Oct. 20

as the result of the commission's decision in the Hoch-Smith Eastern iron and steel investigation. The result will be a revised system of iron and steel rates from the Atlantic Coast to the Rocky Mountains. Since iron and steel rates were revised in the Consolidated Southwestern cases in 1928 and in the Southeast in Southern Class Rates case in 1927, only the Pacific Coast territory is left for treatment.

Western Trunk Line territory, roughly, may be described as extending west from Lake Michigan and the Mississippi River to the Rocky Mountains and north from and including Kansas and northern Missouri to the Canadian border.

The revision covers class rates between points in Western Trunk Line territory and between points in that territory, on the one hand, and points in the entire country east of the Mississippi River and Lake Michigan, on the other. It also includes rates over the Lake-and-rail routes between Western Trunk Line territory and the East. Western Trunk Line territory, for the purpose of applying the rates recommended by the examiners, would be divided into three parts or zones. The lowest rated zone includes, roughly, that part of the territory east of the Missouri River and what is known as the Sioux Falls-Twin Cities-Duluth line. The intermediate

In a statement concerning their work, the examiners said that "while the proposed basis would effect many reductions from the present rates, increases would predominate."

"The measure of the increase," continued the examiners, "is substantially greater in the lowest rated zone than in the others. The basis is designed with relation to adjustment in adjoining territories, but is also intended to give Western Trunk Line respondents (railroads) some additional revenues, which, it is believed, their financial condition warrants."

The method for ascertaining the rates to be applied is complicated whenever traffic is to be hauled from without Western Trunk Line territory to a point within it. For example, Chicago is in Illinois Freight Association territory. A shipment of iron and steel from that point to Denver would require the ascertainment of the distance the traffic moves in Illinois Freight Association territory and the distances it moves within each of the three zones into which Western Trunk Line territory would be divided. Distances would have to be computed by way of the shortest routes over which the traffic could be moved without transfer of lading.

Luntz Iron & Steel Co., Canton, Ohio, has announced the opening of a branch office at 320 Citizens National Bank Building, Kokomo, Ind., to do a general business in old materials. F. I. Kilcline is in charge.

# British Plan Group Organizations

Negotiations Cover Heavy Industry—German Mills Laying Off Men—Tightening in Foreign Ores for American Market

(By Cable)

LONDON, ENGLAND, Aug. 12.

WITH the Cleveland holiday week in progress, new business in pig iron is small, but makers are preparing to increase their output. Four additional furnaces are expected to blow in on the Northeast coast during September, and, meanwhile, furnaces are well booked with tonnage.

Hematite iron prices are firmer, but occasionally show some irregularity. About 950 tons of special quality Hematite was shipped last week to the United States.

Finished steel is quiet because of the holidays. There is a fair domestic demand, but overseas business is meager. Some makers are still well booked ahead, and all are expecting an early revival.

Continental markets continue dull, but the belief is growing that an improvement is likely in the near future.

Tin plate inquiry is expanding, and with a good demand for deliveries up to the end of the year, makers have adopted a firmer attitude, and most mills are now quoting 18s. 6d. (\$4.48) per base box, f.o.b. works port. Home demand is fair and some export sales have been effected.

Galvanized sheet business is slightly better, although Indian demand is still small. Far Eastern demand for black sheets has improved, and business is active in both the light and medium gages.

In an interview on his eighty-first birthday, Sir Arthur Dorman, Dorman, Long & Co., said: "British manufacturers realized that coopera-

tion and united organization are essential if they were to maintain their position. Hence negotiations for unification of the heavy steel industry have been instituted. Preliminary efforts have met with fair success, and there is the probability that in the near future the British iron and steel industry will be organized into groups."

Armstrong Whitworth & Co. have booked orders for two Norwegian 9000-ton tank ships.

German activity is slackening, and the Vereinigte Stahlwerke A. G. is laying off shifts at Hoerde and the Deutsche Edelstahl Werke is to discharge another 500 men at Bochum. German mills are reported to have booked large tonnages of rolled steel for Holland and some important Russian contracts for ship plates. South Africa has placed an order for a tonnage of rails with Polish works, which are now competing keenly with the International Rail Makers Association.

producers have no iron available for delivery before October, and the only supplies available for prompt shipment are in the hands of merchants. Pig iron production costs have increased steadily throughout the year and no reduction is expected, as foreign ore is advancing. High iron ore prices, however, are encouraging the resumption of operations at domestic mines, but the coke shortage continues acute.

Excessive capacity is still a feature of the steel market. Domestic demand for heavy steel products has been active and is expected to increase, in view of important projects in prospect, such as bridge construction, road building and new power plants. Steel mills are still experiencing difficulty in regaining export markets and are represented in a delegation that has gone to South America to study the possibility of developing trade in certain special products.

Business with the Far East is irregular, especially with China, where buying has been affected adversely by the recent political developments. In Japan the rapidly increasing output of Japanese steel mills is curtailing imports. Through the steel makers' export committee, however, some fair shipyard contracts have been negotiated with Japan and also with Canadian buyers. Continental competition is not so keen as it was some time ago, but may again become an important factor as a result of the recent decline in the prices of European sellers.

## British Pig Iron Buoyant—Steel Exports Fair

LONDON, ENGLAND, Aug. 1.—The iron and steel business here is affected by the holiday season, and improvement is not expected until early fall. Pig iron producers are optimistic and look for a heavy demand from domestic consumers, which will necessitate blowing in additional furnaces. It is expected that by September there will be 50 of a total of 95 furnaces in blast in the Cleveland district. Meanwhile, Cleveland

British and Continental European Export prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp, with the £ at \$4.85

British Prices, f.o.b. United Kingdom Ports							
Cleveland No. 3 foundry	£3 12½s.	to £3 13½s.	\$17.58 to \$17.82	Sheet bars, Thomas	4 10	to 5 0	21.82 to 24.25
East Coast Hematite	3 15	to 3 15½	18.18 to 18.30	Wire rods low C., No. 5 B.W.G.	6 4	to 6 6¼	30.06 to 30.61
Ferromanganese, export	13 10	to 14 0	65.47 to 67.90	Black sheets, No. 31 gage, Japanese	12 10		60.62
Billets, open hearth	6 7½	to 6 10	30.92 to 31.52	Rails, 60 lb. and heavier	6 10*		31.52
Sheet bars, open hearth	6 5	to 6 10	30.31 to 31.52	Rails, light	6 1½		29.46
Black sheets, Japanese specifications	13 0	to 13 5	63.05 to 64.26	Steel bars, merchant	5 13	to 5 14	1.24 to 1.26
Tin plate, per base box	0 18¼	to 0 18½	4.42 to 4.48	Steel bars, deformed	5 12	to 5 12½	1.21 to 1.22
Rails, 60 lb. and heavier	7 15	to 8 15	37.59 to 42.43	Beams, Thomas, British standard	5 2	to 5 7½	1.10 to 1.16
Cents per Lb.				Channels, Thomas, American sections	5 15	to 6 0	1.24 to 1.32
Steel bars, open hearth	7 15	to 8 10	1.67 to 1.84	Angles, Thomas, 4-in. and larger, over ¾"	5 6		1.14
Beams, open hearth	7 2½	to 7 12½	1.55 to 1.65	in. thick	5 14½		1.25
Channels, open hearth	7 7½	to 7 17½	1.60 to 1.71	Angles, Thomas, 3-in.	5 14½		1.62
Angles, open hearth	8 2½	to 8 12½	1.76 to 1.86	Ship plates, open-hearth inspected	7 10		1.62
Ship plates, open hearth	7 12½	to 8 2½	1.66 to 1.76	Hoop and strip steel, over 6-in. base	5 16	to 5 18	1.25 to 1.27
Black sheets, No. 24 gage	10 5	to 10 10	2.21 to 2.27	Wire, plain, No. 8 gage	7 8½		1.63
Galvanized sheets, No. 24 gage	13 7½	to 13 10	2.89 to 2.92	Wire, galvanized, No. 8 gage	9 8½		2.03
Continental Prices f.o.b. Antwerp or Hamburg				Wire, barbed, 4-pt. No. 12 B.W.G.	11 18½		2.58
Foundry iron, 2.50 to 3.00 per cent sil., 0.50 to 0.90 per cent phos.	£3 9s.	to £3 13½s.	\$16.73 to \$17.82	Wire nails, base	9 7¼		\$1.87 per keg
Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phos.	3 11		17.21	Wire nails, assortments, 1 to 6-in. keg	10 6½		2.23
Billets, Thomas	4 18	to 5 0	23.76 to 24.25	*Open-hearth steel, 10s. (\$2.42) per ton extra.			



## Foreign Iron Ore Prices High

### Swedish, Algerian and Spanish Mines Offer Extended Deliveries or Do Not Quote—Japanese Seek Supplies

NEW YORK, Aug. 13.—European demand for iron ore is at the highest peak since the war. Germany and Great Britain have been especially large buyers, and the leading foreign iron ore producers have booked a record tonnage in the first half of this year. North African, Swedish and Spanish mines are under contract for the greater part of their production next year and well into 1931, and are showing little interest in additional business, even at advanced prices. North African mines are either out of the market temporarily or are asking up to 12½c. per unit, c.i.f. Atlantic port, with delivery long delayed. Swedish sellers are in most cases not interested in quoting. At these prices sales to consumers in the United States are practically impossible. While the condition of the iron ore market is attributed to a generally heavy demand from European consumers, Germany and Great Britain have been by far the largest buyers, contracting many months ahead. The London office of a large ore selling company, which controls North African mines, has taken contracts

for about five times as much tonnage in the first half of the year as in the same period in 1928.

Faced with an inadequate supply of iron ore from the usual leading sources, Japanese consumers are apparently embarrassed. Recently Japanese furnaces have been depending largely upon purchases of iron ore in the Philippines and the Straits Settlements. Some cargoes of Whyalla manganiferous iron ore from the Broken Hill Proprietary Co. properties in Australia have arrived at Baltimore, and the Japanese, willing to pay slight premiums for high-grade ores, are apparently interested in importing from the same mines. However, the total tonnage of this ore available, it is said, is not very large.

The foreign fluorspar market is also strong. Prices have advanced in \$19 per net ton, duty paid, Atlantic port, and sellers are unable to offer shipment before the end of November, or early in December. Some of the foreign producers have notified their agents not to accept any business without first consulting them.

### European Car Builders' Syndicate Proposed

BERLIN, GERMANY, July 27.—Plans to form a syndicate of European railroad car builders have been modified to include car shops in Czechoslovakia, which are already members of a national association. Other producing countries which have been requested to become members include Austria, Hungary, Italy and Sweden. The aim of the association will be to control competition so as to permit profitable prices.

Despite the recent bank syndicate credit of 100,000,000 m. (\$23,800,000) to finance orders of the Railroad Corporation placed with German builders, 90 per cent of which are members of the Wagenbauvereinigung (car builders association), the industry in Germany is depressed. Just prior to the war, Germany had 46 car building plants, which were booking orders averaging 370,000,000 m. a year, or based on post-war values, 500,000,000 m. (\$119,000,000) a year. In 1924 there were 69 builders in Germany, but orders aggregated only 155,000,000 m. (\$36,890,000). As a result of mergers and liquidations in the past few years, only 30 plants remained when the Railroad Corporation, last year, made a quota agreement with the association. Since then, eight of these have suspended operations.

In addition to the Wagenbauvereinigung, which handles orders from the Railroad Corporation, car builders in Germany have the Deutsche Wagen-

bau-Industrie (DEUWI), which handles agreements with the street car and other private companies and municipalities. Despite these agreements and associations, the depression of the business is such that it is considered likely that more mergers will be necessary and possibly some liquidations.

### Germany Reduces Export Prices to Meet Belgium

BERLIN, GERMANY, July 27.—In the past week the volume of foreign orders has decreased and export prices of steel products have declined. Recently Continental business has been dominated by Belgian mills, which are reported to have diminishing backlogs. The holiday season has influenced the steel market and Far Eastern consumers have been inactive since the beginning of the dispute between Russia and China. With Belgium a keen competitor for new business, the German Stahlwerksverband has again cut its export prices, f.o.b. Antwerp, but even with this reduction, Belgian prices on steel bars are 1s. to 1s. 6d. (24c. to 35c.) a ton lower.

The difference between German and "world market" prices is still considerable. Prices established for August by the Ingot Steel Syndicate, for the purpose of calculating rebates to consumers manufacturing for export, show billets at 119 m. (\$28.32) per ton in the domestic market and 108 m. (\$25.70) per ton for export; slabs at

124 m. (\$29.51) per ton in the domestic market and 108 m. (\$25.70) per ton for export and bands at 165 m. per ton (1.75c. per lb.) in the domestic market and 124 m. per ton (1.31c. per lb.) in the export market.

Shipbuilding shows no improvement. In the second quarter of 1929 only 272,444 gross tons of shipping was under construction, compared with 406,000 tons in the first quarter. This decline is attributed to the approaching completion of the construction programs of the leading shipping companies. By mergers and liquidation of certain companies, shipbuilding capacity has been reduced to 650,000 tons, but even with this total there is but little prospect of full operation.

### German Automobile Builders Want Higher Tariff

BERLIN, GERMANY, July 27.—The automobile industry continues to urge an increase in the tariff on motor cars to reduce American competition. The duties, which have been automatically reduced since 1925, reached their lowest point in July, 1928. It is claimed by German producers that the United States is driving all competitors out of the German market.

Statistics cited by producers show that in 1924, 19.8 per cent of the motor cars imported were from the United States, 24.5 per cent from France, 19.5 per cent from Austria and 7.6 per cent from Italy. In the first five months of this year, 85.1 per cent of the imports were from the United States, 5.5 per cent from France, 6 per cent from Italy, and 2.1 per cent from Austria. An association of German automobile consumers has been formed, the members of which pledge themselves to "unqualified preference for German cars."

### Poland Retains Free List on Machinery

WARSAW, POLAND, July 29.—The Government has continued the free list on imports of machinery for industrial expansion until Dec. 31. Machinery for other purposes, when the machines are not yet produced in Poland, will be admitted at 25 per cent of the established duty. This reduction is also effective until the end of the year. The wire and wire nail industry is expanding rapidly, and a mill that began operations in July was equipped with 150 wire nail machines, bought in Germany.

### Turks to Build Steel Plant

HAMBURG, GERMANY, Aug. 1.—Plans for a Turkish Government steel plant provide for two blast furnaces of 500 tons daily capacity, four 100-ton open-hearth furnaces and bar, rod, shape and wire rod mills. Located near Angora, the plant will have a large supply of iron ore near at hand, but coal will be imported. Further details will be available in September, when bids will be asked on the plant and equipment.

# New Record for Half Year Pig Iron

January-June Data Given in Detail on Opposite Page—  
Exceed Both Halves of 1928

OUTPUT of pig iron and ferroalloys for the first half of this year was the largest for any half-year on record. At 21,820,060 gross tons, it exceeded the previous half-year record of 21,016,475 tons, January to June, 1923, by 803,585 tons. The production to July 1, this year, was also larger than for either half of 1928. It was 3,133,758 tons larger than the first half of 1928, or nearly 17 per cent. Production of ferroalloys was larger than that for either half of last year.

Of the total output of pig iron and ferroalloys, 16,857,189 tons, or 78.7 per cent, was for makers' own use.

In the first half of 1928 this percentage was 79.2. Of the total output of foundry pig iron, 1,958,718 tons, or 91.5 per cent, was made for sale. About 53 per cent of the ferromanganese and spiegeleisen was made for makers' own use. This proportion was 58 per cent last year. Again this year the ferromanganese output is not given separately from that of spiegeleisen.

Separate tables on the following page give coke pig iron, charcoal pig iron and ferroalloy production. Compiled by the American Iron and Steel Institute.

copper mills are now located. It is here that the new units will be erected. The Orleans plant is now largely devoted to general offices and departments which fabricate brass and copper products and lockseam tubing.

## Iron and Steel Plants Draw Little on Foreign Labor

WASHINGTON, Aug. 13.—The limited extent to which the iron and steel industry of the United States now draws upon foreign skilled labor is indicated by the fact that during the fiscal year ended June, 1929, only 1440 immigrants were engaged by the industry. For the previous fiscal year, the total was 1857. These totals become smaller when the number of iron and steel workers emigrating from the United States is taken into account, those departing in the fiscal year 1929 having been 164 as against 326 in the previous fiscal year. Machinists coming to the United States totaled 1629 in the fiscal year 1929, as compared with 2032 in the previous fiscal year, while the numbers emigrating were 472 and 632, respectively.

## High-Speed Machine Threads Pipe Automatically

MILWAUKEE, Aug. 12.—A machine that is declared to be a mechanical marvel of the "giant hand" type and which will automatically thread and handle 600 pieces of pipe an hour was given its final test at West Allis, Wis., Aug. 5, before engineers from some of the largest pipe manufacturing plants in the United States. The machine was designed by Frank M. Davis, Davis & Thompson Co., West Allis, for the Youngstown Sheet & Tube Co. Engineers who saw the demonstration included F. H. Whitman and A. A. Jacel, A. O. Smith Corporation, Milwaukee, with others from the Globe Steel Tubes Co., Milwaukee, the National Tube Co. and Spang Chalfant Co., Pittsburgh.

The machine, which weighs about 25 tons, is 35 ft. long by 8 ft. wide and 7 ft. high. From the time that the pipe is picked up by the conveyor line until it is gripped by the chain and toggle clamping device, threaded and discharged, the operation is automatic and controlled by one man. It was demonstrated as a machine that with one man would do the work of ten or more present machines, each operated by two men. It will cut threads on steel pipe up to 4 in. in diameter.

## Dallas Brass & Copper Co. To Build New Units

Three new building units to cost approximately \$500,000 will be erected by the Dallas Brass & Copper Co., Chicago. They will consist of a large addition to the brass mill, a building to house the carpenter shop, and a building for the engineering department and machine shop.

The Dallas company, founded in 1907, erected a three-story plant at 820 Orleans Street in 1920, which housed a battery of mills to produce brass and copper strips and sheets. Five years later 12 acres were pur-

chased at Sixty-sixth Street and Grand Avenue, where the first units of the present rolling mills were constructed. Later additional acreage was purchased on which a modern casting shop and complete brass and

## COMING MEETINGS

### August

**Society of Automotive Engineers.** Aug. 26 to 28. Joint meeting with Aeronautic Chamber of Commerce of the United States, Hotel Hollenden, Cleveland. C. E. Clarkson, 29 West Thirty-ninth Street, New York, general manager.

**Conference on Human Relations in Industry.** Aug. 28 to Sept. 1. Annual meeting under auspices of National Council of Y. M. C. A., Silver Bay, Lake George, N. Y.

### September

**Lake Superior Mining Institute.** Sept. 6 and 7. Annual meeting, Houghton Club, Houghton, Mich. A. J. Yungbluth, Ishpeming, Mich., secretary.

**American Manganese Producers' Association.** Sept. 9 and 10. Annual meeting, Mayflower Hotel, Washington. Harold A. Pumpelly, Metropolitan Bank Building, Washington, secretary.

**American Society for Steel Treating.** Sept. 9 to 13. National metals congress and exposition, Hotel Cleveland and Public Auditorium, Cleveland. W. H. Eisenman, 7616 Euclid Avenue, Cleveland, secretary.

**American Institute of Mining and Metallurgical Engineers.** Sept. 9 to 13. Annual meeting of Institute of metals and iron and steel divisions, Hotel Cleveland, Cleveland. H. Foster Bain, 29 West Thirty-ninth Street, New York, secretary.

**American Society of Mechanical Engineers.** Sept. 11 to 13. Iron and steel division, Hotel Hollenden, Cleveland. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

**American Welding Society.** Sept. 9 to 12. Fall meeting, Hotel Statler, Cleveland. M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

**Institute of Metals (British).** Sept.

9 to 12. Fall meeting, Dusseldorf, Germany. G. Shaw Scott, 36 Victoria Street, London, S. W. 1, England, secretary.

**Iron and Steel Institute (British).** Sept. 10 to 13. Fall meeting, Newcastle-on-Tyne, England. George C. Lloyd, 28 Victoria Street, London, S. W. 1, England, secretary.

**American Railway Tool Foremen's Association.** Sept. 11 to 13. Annual convention, Hotel Sherman, Chicago. F. A. Armstrong, 546 West Monroe Street, Chicago, secretary.

**Ohio Foundries Association.** Sept. 15. Annual meeting, three-day trip on Ohio River steamer from Cincinnati to Ashland, Ky. E. E. Scott, Cleveland, secretary-manager.

**American Electrochemical Society.** Sept. 19 to 21. Fall meeting, William Penn Hotel, Pittsburgh. Colin G. Fink, Columbia University, New York, secretary.

**American Refractories Institute.** Sept. 24 and 25. Fall meeting with Refractories Division of the American Ceramic Society, Deshler-Wallick Hotel, Columbus, Ohio. Dorothy A. Texter, Oliver Building, secretary.

**Concrete Reinforcing Steel Institute.** Sept. 30 to Oct. 2. Semi-annual meeting, Wawasee Hotel, Wawasee, Ind. M. A. Beeman, 2112 Tribune Tower, Chicago, secretary.

**National Industrial Advertisers' Association.** Sept. 30 to Oct. 2. Eighth annual convention, Gibson Hotel, Cincinnati. Benjamin H. Miller, 420 Lexington Avenue, New York, secretary.

**National Machine Tool Builders' Association.** Sept. 30 to Oct. 4. Second machine tool exposition, Public Auditorium, Cleveland. E. F. DuBrul, 617 Vine Street, Cleveland, manager.

**National Safety Council.** Sept. 30 to Oct. 4. Eighteenth annual congress, Stevens Hotel, Chicago. W. H. Cameron, 198 East Ohio Street, Chicago, managing director.

# 1929 January-June Output of Pig Iron (Compiled by American Iron and Steel Institute)

## HALF-YEARLY OUTPUT OF PIG IRON AND FERRO-ALLOYS BY STATES.

### HALF-YEARLY PRODUCTION OF PIG IRON BY STATES.\*

States	Blast furnaces (a)				Production of pig iron not including ferro-alloys—Gross tons		
	In blast Dec. 31, 1928	June 30, 1929			First half of 1928	Second half of 1928	First half of 1929
		In	Out	Total			
Massachusetts	1	1	0	1			
New York	12	16	7	23	1,213,985	1,153,205	1,444,109
New Jersey	0	0	2	2			
Pennsylvania	64	71	24	95	5,762,007	6,290,398	7,200,722
Maryland	5	6	0	6			
Virginia	0	0	9	9			
West Virginia	7	3	1	4			
Kentucky	2	2	1	3	938,864	1,041,569	1,039,524
Mississippi	0	0	1	1			
Texas	0	0	1	1			
Tennessee	1	1	4	7			
Alabama	18	17	14	31	1,252,229	1,265,256	1,411,933
Ohio	43	45	12	57	4,296,980	4,720,045	4,972,419
Illinois	17	19	6	25	2,042,079	1,900,433	2,265,105
Indiana	14	16	2	18	2,443,888	2,237,477	2,582,254
Michigan	8	8	2	10			
Wisconsin	0	0	2	2			
Minnesota	2	3	0	3			
Missouri	0	0	2	2	460,609	479,024	488,589
Colorado	3	2	3	5			
Utah	1	1	0	1			
Total	194	213	93	306	18,312,341	19,089,307	21,404,654

(a) Closed since starting pig production.

### HALF-YEARLY PRODUCTION OF COKE PIG IRON BY STATES.\*

States	In blast Dec. 31, 1928	June 30, 1929	Total	First half of 1928	Second half of 1928	First half of 1929
Massachusetts	1	1	2			
New York	12	16	28	1,213,985	1,153,205	1,444,109
New Jersey	0	0	0			
Pennsylvania	64	71	135	5,762,007	6,290,398	7,200,722
Maryland	5	6	11			
Virginia	0	0	0			
West Virginia	7	3	10	938,864	1,041,569	1,039,524
Kentucky	2	2	4			
Tennessee	1	2	3			
Texas	0	0	0			
Alabama	18	17	35	1,252,229	1,265,256	1,411,933
Ohio	43	45	88	4,296,980	4,720,045	4,972,419
Illinois	17	19	36	2,042,079	1,900,433	2,265,105
Indiana	14	16	30	2,443,888	2,237,477	2,582,254
Michigan	8	8	16			
Wisconsin	0	0	0			
Minnesota	2	3	5			
Missouri	0	0	0	460,609	479,024	488,589
Colorado	3	2	5			
Utah	1	1	2			
Total	189	208	397	18,233,238	19,025,450	21,437,150

### HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON BY STATES.\*

States	In blast Dec. 31, 1928	June 30, 1929	Total	First half of 1928	Second half of 1928	First half of 1929
Tennessee	0	1	1			
Mississippi	0	0	0	79,103	63,857	67,504
Michigan	4	4	8			
Total	4	5	9	79,103	63,857	67,504

### HALF-YEARLY PRODUCTION OF ALL KINDS OF FERRO-ALLOYS BY STATES.†

States	In blast Dec. 31, 1928	June 30, 1929	Total	First half of 1928	Second half of 1928	First half of 1929
New York	1	0	1	50,192	102,633	112,999
New Jersey	0	0	0			
Pennsylvania	5	8	13	185,021	185,176	215,709
Maryland	0	0	0			
Virginia	1	1	2			
West Virginia	0	0	0	29,407	43,019	37,455
Tennessee	0	1	1			
Alabama	1	0	1			
Ohio	2	2	4			
Iowa	0	0	0	66,451	49,167	49,243
Colorado	0	0	0			
Total	10	12	22	374,071	379,995	415,406

### HALF-YEARLY PRODUCTION OF PIG IRON AND FERRO-ALLOYS ACCORDING TO FUEL USED.

	In blast Dec. 31, 1928	June 30, 1929	Total	First half of 1928	Second half of 1928	First half of 1929
Coke pig iron	189	208	397	18,233,238	19,025,450	21,437,150
Charcoal pig iron	4	5	9	79,103	63,857	67,504
Total pig iron	193	213	406	18,312,341	19,089,307	21,404,654
Total ferro-alloys	10	12	22	374,071	379,995	415,406
Grand total	203	225	428	18,686,412	19,469,302	21,820,060

\* Does not include the production of ferro-manganese, spiegeleisen, ferro-silicon, or other ferro-alloys.

† Includes ferro-manganese, spiegeleisen, ferro-silicon, and other ferro-alloys made in blast furnaces or in electric furnaces.

‡ During the first half of 1929 there were 18 blast furnaces which made ferro-alloys only or ferro-alloys and pig iron.

§ Blast furnaces only; electric furnaces not included.

## HALF-YEARLY OUTPUT OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS. §

### HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States	First half of 1928	Second half of 1928	First half of 1929
Massachusetts, New York	518,625	632,610	684,597
Pennsylvania—Allegheny County	1,787,345	1,840,625	2,183,721
Other counties	1,855,362	2,240,235	2,562,927
Maryland, West Va., Kentucky, Ala.	1,141,242	1,236,267	1,402,065
Ohio	2,170,385	2,559,412	2,636,063
Indiana, Illinois	2,781,455	2,394,468	3,015,263
Michigan, Minnesota, Colorado, Utah	461,574	513,805	590,228
Total	Gross tons, 10,715,988	11,408,422	12,984,864

### HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

States	First half of 1928	Second half of 1928	First half of 1929
Pennsylvania	1,784,783	1,826,628	2,032,404
New York, Md., W. Va., Tenn., Ala.	497,099	316,863	482,965
Ohio	1,395,124	1,497,392	1,536,162
Indiana, Illinois	780,748	913,240	892,926
Total	Gross tons, 4,457,754	4,556,093	4,944,457
Including low-phosphorus cast iron	100,681	76,125	174,593

### HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON.

States	First half of 1928	Second half of 1928	First half of 1929
Massachusetts, New York	435,834	329,003	297,112
Pennsylvania	247,567	316,941	394,907
Virginia, Kentucky, Tennessee, Ala.	675,140	813,671	714,231
Ohio	285,049	247,180	333,555
Illinois	230,730	226,128	234,078
Michigan	175,203	115,917	164,111
Wisconsin, Minnesota, Colorado, Utah	65,775	65,452	63,176
Total	Gross tons, 2,105,398	2,104,392	2,111,170

### HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States	First half of 1928	Second half of 1928	First half of 1929
Massachusetts, New York	106,426	105,701	305,169
Pennsylvania	32,757	53,356	55,117
Ohio	438,420	411,963	454,048
Kentucky, Illinois, Michigan, Minn.	368,996	405,351	459,975
Total	Gross tons, 946,599	976,371	1,274,309

### HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

States	First half of 1928	Second half of 1928	First half of 1929
Pennsylvania	51,968	12,383	59,369
Virginia, Alabama, Ohio	9,257	15,034	10,862
Total	Gross tons, 60,925	27,417	70,171

### HALF-YEARLY PRODUCTION OF MISCELLANEOUS GRADES OF PIG IRON AND DIRECT CASTINGS.

States	First half of 1928	Second half of 1928	First half of 1929
New York, Pennsylvania	2,879	947	2,432
Alabama	2,295	4,296	878
Ohio	6,567	7,441	8,069
Indiana, Illinois, Michigan	13,996	3,938	8,313
Total	Gross tons, 25,677	16,592	19,692

### HALF-YEARLY PRODUCTION OF FERRO-ALLOYS BY KINDS.

	First half of 1928	Second half of 1928	First half of 1929
Ferro-manganese and spiegeleisen	205,073	214,140	232,769
Ferro-silicon	152,389	151,206	160,786
Ferro-phos. and all other ferro-alloys	16,609	14,649	21,851
Total	Gross tons, 374,071	379,995	415,406

### PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST SIX MONTHS OF 1929.

Pig iron and ferro-alloys	For sale	For maker's use	Total Gross tons
Pig iron:			
Basic	1,155,923	1,828,941	2,984,864
Bessemer and low-phosphorus	239,976	4,704,481	4,944,457
Foundry	1,958,718	152,452	2,111,170
Malleable	1,153,818	120,482	1,274,300
Forge or mill	38,158	32,013	70,171
White and mottled, direct castings, etc.	872	18,820	19,692
Total pig iron	Gross tons, 4,547,465	6,857,189	21,404,654
Ferro-alloys:			
Ferro-manganese and spiegeleisen	108,707	124,062	232,769
Ferro-silicon	160,786		160,786
All other ferro-alloys	21,851		21,851
Total ferro-alloys	Gross tons, 291,344	124,062	415,406
Total pig iron and ferro-alloys	Gross tons, 4,838,809	16,981,251	21,820,060



# This Issue in Brief

**Eliminates hot spots in galvanizing tanks** by using electric heat. Tests reveal that solubility of the steel in the tank increases sharply at temperatures above 900 deg. Fahr. Thus the uniformity of electric heat lengthens the life of tank.—Page 404.

\* \* \*

**Rapid loss of heat is a difficult problem** in forging seamless steel drums. Cooling rate may be reduced by heating the mandrel. Heat loss may be cut still further by employing a hollow mandrel.—Page 400.

\* \* \*

**Aluminum foundry uses X-ray to find hidden defects.** Testing laboratories form a part of the plant itself, as analyses are regularly made of test bars drawn from each heat.—Page 406.

\* \* \*

**Flaws in duralumin parts are revealed** by anodic oxidation process. Surface defects which would otherwise be unnoticed are exposed when oxide film is applied. The film is primarily designed to guard parts against corrosion.—Page 409.

\* \* \*

**Iron castings to be enameled** should not contain over 3.7 per cent carbon. Otherwise the carbon content may cause the enamel to become transparent, uneven, and defective in other respects.—Page 412.

\* \* \*

**To improve rolling qualities** of open-hearth free-cutting steel, increase the manganese content. The steel rolls much better with manganese about 1.25 per cent, rather than the usual 0.60 to 0.80 per cent.—Page 399.

\* \* \*

**Cooling conveyors carrying castings** have baskets with bottoms turned up at an angle of 90 deg. on each side. This makes it easier to dump the contents.—Page 396.

**Reduces rejections of blooms** for cold-drawing bars from 20 per cent to less than 5 per cent by increasing manganese content to 1.25 per cent. The opinion that higher manganese content would induce brittleness and hardness was found to be erroneous.—Page 399.

\* \* \*

**Galvanizing dross reduced to a minimum** by accurate control of temperature and by uniform temperature throughout the tank. This is made possible by use of electric heat. Lower galvanizing costs result from lower dross, longer tank life, and elimination of firing labor.—Page 404.

\* \* \*

**Solution of making steel which is free from seams and slivers** lies between excessive care in handling and rolling the ingots after teeming, and the production of a tough metal that will roll without great care. In tonnage operations the latter is preferred, because it allows greater blooming mill production.—Page 399.

\* \* \*

**Saves 75 per cent of floor space** by using vertical core ovens. Chevrolet core-making department has 16 vertical ovens 45 ft. high. Coremaker sets his own cores in the oven, taking out an empty tray. This eliminates the use of racks and the provision of aisles.—Page 397.

\* \* \*

**Airplane engine crankshafts** are serial-stamped before and after machining. The steel forging is first heat treated, then inspected for flaws and stamped with a serial number. Spots are ground for hardness test. After rough milling the cheek edges, the serial number is re-stamped.—Page 402.

**Sherardizes aircraft steel parts to prevent rusting.** British aircraft builders believe sherardizing to be superior to rustproofing by electro deposition of zinc.—Page 409.

\* \* \*

**Waste molding sand is economically removed** by mixing with water. A hydraulic pump, connecting with a 5-in. line, delivers the sand to a dump.—Page 396.

\* \* \*

**Galvanizing tank failures** are reported to operator by alarm signal. Brick work underneath the tank is shaped so that leaking zinc will accumulate and sound alarm by closing circuit of two heat-resisting wires.—Page 405.

\* \* \*

**Sudden raise in discount rate will not force business curtailment,** says economist. Tight money does not necessarily affect business quickly. In the long run, however, continued high money rates will force either business expansion or credit policy to give way.—Page 393.

\* \* \*

**Chromium plating practice favors sulphuric acid** as a substitute for chromic sulphate, owing to high purity obtainable, says English metallurgist. The concentration of sulphuric acid in the solution has to bear a fixed relationship to the chromic acid content.—Page 394.

\* \* \*

**"Poor man's refrigerator,"** heated on gas stove, freezes cubes for 24 hours on two cents worth of gas. Freezing unit, after heating on gas stove, is placed in refrigerator. Units, made of welded stampings, are now in quantity production.—Page 410.

A. I. FINDLEY  
Editor

# THE IRON AGE

W. W. MACON  
Managing Editor

ESTABLISHED 1855

## Mergers and the "American System"

**P**RESIDENT HOOVER gave much prominence in his campaign speeches to the "American system." In stressing the importance of individual initiative and private enterprise, he struck a sympathetic chord in a people not far removed from pioneer days. One of our most cherished beliefs is that American progress has been chiefly due to the absence of frozen social classes and to the energizing force of ambition in all ranks of life.

How has the American system fared since its distinguished exponent took office? If invasion of business by the Government is made the test, it can be said that there has been little change. If all factors that influence the economic independence of the individual are considered, the answer is quite different. The trend toward business consolidations has become more pronounced. While the resulting corporate organizations are in private hands, the individual's freedom of action is being further circumscribed. In food products, for example, mergers of manufacturing companies are being tied up with nation-wide chain store organizations, with the logical outcome—if the scheme should be developed to finality—of cutting off independent retailers from sources of supply and depriving ultimate consumers of choice in buying.

Strange to say, the general public is as firmly convinced of the merit of consolidations as it was certain of their menacing character two decades ago. It sees in large-scale business the road to efficiency and the answer to increased competition. Promoters have capitalized the belief, floating the stock issues of mergers of all descriptions and incidentally reaping a harvest.

It is not to be gainsaid that consolidations appear to be justified in certain fields—for instance, in the production of rolled steel—but by no means are they always sound and economic. It must also be borne in mind that promoters are sometimes guilty of sharp practice. Profits claimed for consolidations are not always to be taken at face value; they may be obtained temporarily—and until stock is unloaded on the public—by cutting off so many necessary items of expense as to do irreparable injury.

If for the sake of argument it be granted that all consolidations are to survive, even those milked dry by promoters, the social implications of such a result would still be serious. Large-scale business demands large-scale financing, of which relatively few banking houses are capable. Thus it is not hard to envisage a great network of mammoth organizations controlled by a small group. That would be a far cry from the

American system. It would reduce the mass of the population to cogs in a big business machine; it would provide little more stimulus to initiative than state socialism.

Fortunately so sweeping a change in our economic structure is not an early prospect. While size in business is a compelling factor in some directions, management will always be a more decisive influence. In the last analysis men rather than systems determine the destinies of industrial and commercial enterprises. Our greatest business successes have been traceable to executive ability of the first order. One need mention only Ford, Carnegie, Gary, DuPont and Rockefeller. Mergers may cause still more concern to champions of the American system before the trend of our economic development becomes clearly defined. Yet it may be confidently predicted that in the future, as in the past, many large businesses will retrograde and many small businesses will prosper and grow great.

## Mounting Steel Records

**I**N the latter part of last year the steel industry began making new records covering 12-month periods. Production is now running so far above that of a year ago that a fresh reference to the subject is justified each month. In THE IRON AGE of July 11, it was noted that steel ingot production in 311 working days through last June totaled 54,675,000 tons. Now we find that production in the 12 months, 311 working days, through July was approximately 55,570,000 tons. Nearly 900,000 tons was added to the record of 12 consecutive months in a single month's time, and this month is altogether likely to add half a million tons more, making the 12-month total, September to August inclusive, fully 56,000,000 tons.

Prior to last year the largest output for 12 consecutive months was 47,000,000 tons, in the 12 months through May, 1927. The gain over that in the 12-month period just ended is 18.2 per cent, in 26 months, which represents a rate of increase of 8 per cent per annum. Contrasted with that annual increase are annual rates of 2 per cent from 1920 to 1923 and 3 per cent from 1923 to 1928.

Chances are that production will now taper off somewhat from last month's rate, but should next December be 13 per cent under July it would still equal December, 1928. When such a decrease would still leave a heavy production it must be considered a possibility, but there is ground for concern as to the influence it might have upon the minds of sellers, anxious to preserve the low average costs per ton that have been made lately by exceptionally heavy output.

Some of the influences that have brought about the 18 per cent increase from the 12 months through May, 1927, to the 12 months through July, 1929, are visible. Comparing the same 12-month periods, automobile production—cars and trucks in the United States and Canada—increased from 4,289,700 to approximately 5,800,000, or by 35 per cent. Fabricated structural steel shipments increased from 3,009,150 tons to approximately 3,400,000 tons, or by 13 per cent. Production of line pipe made a large increase. The increase in production of agricultural implements has been substantial.

The changes have not all been gains, however. Probably there has been a slight decrease in rails, and comparing these precise periods there may have been a slight decrease in freight car building. As the visible increases do not cover the total steel increase it is clear that there have been large gains in other lines of steel consumption not here considered.

### Traits of the Prize-Winners

EDISON'S competitive examination for testing the brains of picked high school boys has acted much like Lindbergh's flight of May, 1927, as a stimulus to young manhood all over the country. Also, both the West Orange examinations and the Paris flight have demonstrated that, whatever the oncoming generation is casting away that the preceding one set store by, the two are not far apart in the standards they set up for prize-winners. Traits that have been admired in Lindbergh and young Huston, the winner of the Edison scholarship, are old-fashioned ones that have given Coolidge and Hoover so strong a hold on the people—common sense, a certain reserve, ability in any situation to do what the circumstances require, and a marked preference for knowing and doing over declaring. Popular approval of this last trait is encouraging when there is so much touting of "self-expression" and the go-getter salesman is to so many people the symbol of success.

Some of the Edison questions, especially the one asking how one marooned on an island and without tools would move a three-ton boulder so many feet horizontally and vertically, recall the scholarship established at Worcester Polytechnic Institute last year. It was to be awarded to the entering freshman who had shown the greatest amount of Yankee ingenuity; and at once it had to be determined what constitutes "Yankee ingenuity." Various definitions came from professors and practical men, but none was more fit than that of Frederick W. Shibley, New York, who identified it with "the inherent ability to solve a knotty problem in a simple and ingenious way, to accomplish a difficult mechanical job without employing the customary tools."

Mr. Shibley's definition recalls what the late James Gayley used to ask for when, as vice-president of the United States Steel Corporation, he advised the deans of various technical schools along in the spring of the year that the corporation was interested in prospective graduates who had shown special promise. In describing the type of men sought he wrote that scholarship, of course, was expected, but he was not looking for grinds. Rather he wanted

the man who had in himself resources for overcoming unexpected difficulties; one who, if he met with a breakdown in taking a load of grain from the farm to town could make a tie-up of fence-rail and harness take the place of the broken wheel and with no outside help get the load to the mill.

### More Copper to Come from Africa

DEVELOPMENT of the important copper properties in Central Africa continues apace. Large and very rich deposits of oxide ores have been mined for some years at Katanga, in the Belgian Congo, and the mines, smelters and refining plants are now operated according to the most modern practices. Yet, as we have heretofore pointed out, many factors have conspired to prevent a rapid expansion in the output of these bonanzas. If such a mine as the Star of the Congo could be opened in Montana or Arizona, its influence on world production and on the copper market would be almost immediate. But Katanga is in Central Africa; the haul is nearly 1800 miles by rail to port, and 9000 miles more by ship to any important customer. This isolation means not only expense in exporting the product to market, but also great expense for importing the necessary equipment, technicians and supplies. Furthermore, the African savage is not a particularly efficient workman, and the labor turnover is large. Lastly, coal and coke are 500 miles away.

These statements are not made to belittle the economic importance of the deposits in the Belgian Congo, but to cite some of the tremendous difficulties which have already been surmounted, and which have operated to restrict the production. Some of them will always be a brake on production; some are being eliminated, at least in part. For instance, a railroad is being built from Katanga to the west coast; 840 miles of the 1170 is already finished, with a motor truck road spanning the gaps. This new outlet will save 600 miles rail and 2600 miles of sea transport and correspondingly reduce time and expense of getting in and getting out.

A serious metallurgical difficulty at Katanga is the fact that practically all the ore is oxidized; little sulphide exists. This handicap will also be removed in the near future, for just across the boundary in Rhodesia great bodies of medium grade copper sulphides have been found. These can be mixed with the rich oxides and smelted to a matte (a more economical proceeding than reducing oxide direct to impure copper), and the sulphur can also be converted into sulphuric acid for leaching and refining purposes.

Under the circumstances, therefore, one can expect operations in the Belgian Congo to expand within the next few years, producing more copper and getting it to the market with more profit.

These new discoveries in Rhodesia are of great interest in themselves, beside the influence they will exert on operations at Katanga. Systematic prospecting of a region approximately 100 miles in diameter has brought to light five deposits, in which surface trenching and diamond drilling have proved up at least 75,000,000 tons of ore containing 3.5 per cent copper, with 200,000,000 tons additional classed as "probable ore." The ore is all within a few hundred feet of



the surface, in thick beds, easily mined. Prominent American engineers have been retained to design mills and smelters. It is estimated that Roan Antelope, one of the early discoveries, will be producing copper early in 1931, and in 1932 will put out 30,000,000 pounds of copper, at a cost slightly over 8 cents a pound. This is only one of five.

What these vast ore reserves and additions to smelting capacity will mean to the price and consumption of red metal needs no lengthy expounding. A mining region rivalling Arizona will be built up in Central Africa during the next decade. The relative amount of world's copper coming from this new center will steadily increase, at the expense of high-cost producers in the United States and elsewhere. It will be a powerful influence to keep the price of copper down to a moderate figure; and uses and consumption will continue to expand in the degree that the price is reduced. Cheaper copper means more used.

### Chances of Coal Trade Betterment

**S**EVEN years ago occurred the great bituminous coal strike, bringing to general attention the fact that the coal trade was in an uneconomical position and quite lacking in efficiency to help itself and serve the public. The cry was "too many mines and too many miners" and the United States Coal Commission was set up to ascertain all the facts. This it did in thorough manner, but nothing happened at Washington. The coal trade was left to economic laws which every one recognized would work quite mercifully to many if not all in the industry.

The fact that seven years have passed without the coal industry becoming righted does not prove that substantial improvement is impossible. Things have been slowly happening, without apparent result, but a great deal had to occur if the remedy were to be found. There are chances now that the coal trade is on the verge of an improvement, hardly a large one but one that would be very welcome considering the

very poor position it has been in over so many years.

Quite a number of mines have disappeared from the practical reckoning and would not be brought into the producing ranks by any moderate upturn in prices obtainable. In number of miners there has been a large decrease. The Pittsburgh district is particularly a case in point, for in its union days it had altogether too many miners, and many men were brought in during the operation of changing the district to a non-union status. About two months ago opinions began to be expressed that miners were not plentiful in the district, while now there are definite reports that really good miners, men able to get out the tonnage and familiar with the mining laws, are actually scarce, that some large producers would like to have more good miners than they can secure. Many men have drifted into other occupations, this movement being facilitated by the general industrial and building activity.

The recent course of coal production indicates a heavy demand, although there has been no stocking and movement of domestic coal has not yet reached proportions that would count. Production in the last few months has been well above 1928, far above 1927, and only a trifle below 1926. It is true that after July 1 production in 1926 rose sharply, under stocking against the expected union suspension of April 1, 1927, showing a large leeway in available capacity; but three years later appearances are that the supply of miners is not nearly so large.

The human element may prove to be quite a factor. There has been a buyers' market in coal for so long that conditions are set for a possible reversal of buyers' policy. The very fact of conditions having so long been strongly in favor of buyers would make a firm, not to say a strong, coal market quite impressive. Selling of coal has appeared to be very difficult, and really has been, but the proportion of total production thus forced upon an unwilling market has not been large, producers in general having a large trade that takes care of itself.

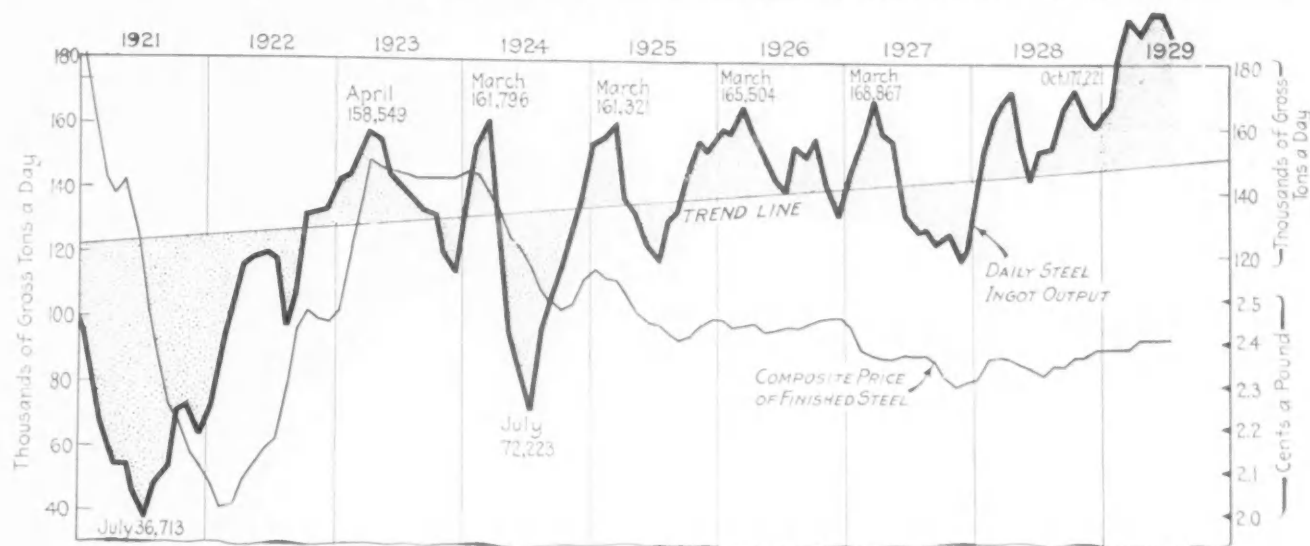
### Chicago Uses Steel Armoring to Obtain Longer Wearing Street Surface



**C**HICAGO has installed a section of Pavagard 10 ft. wide and 120 ft. long at the corner of Michigan Avenue and Randolph Street, one of its busiest corners, to obtain longer wearing surface at this point where the traffic burden is exceptionally heavy. This section has to withstand the stopping impact every 24 hr. of 1600 buses and 67,000 other vehicles which pass the corner in the course of a day.

Pavagard is made of steel strips which, when placed on edge, form a regular pattern or mesh. The accompanying illustration shows the method of assembling Pavagard. The tie-rods hold the strips together in a solid web or mesh, strips being alternately staggered at joints to preserve the continuity of the mat. In the Chicago installation, Pavagard has a 3-in. mesh, the bars being 1 1/4 in. deep. This was assembled on a concrete base, to which was added a binder of tar and gravel. The Pavagard was then asphalted in with topping and rolled, as is customary with this kind of pavement. Pavagard, which is manufactured by the Blaw-Knox Co., Pittsburgh, is characterized as a "steel armoring" for roads, streets and other lanes of traffic subjected to unusual wear.

Ingot Production in July Declined 4.7 Per Cent from the Record-Breaking Daily Rate of May. The trend line shows a normal growth of about 1,013,000 tons a year. Prices in July were 3 per cent better than at midyear of 1928



# Largest July in Steel Ingot Production

Output Slightly More Than Previous Six Months Average—Year  
So Far 18 Per Cent Ahead of 1928

**P**RODUCTION of steel ingots in July declined from that of June, but it was the largest for any July. It was slightly ahead of the average of the preceding six months. It brought the year to date 18.2 per cent above the corresponding seven months of 1928.

At 4,838,093 gross tons for all companies, the decline from June was 43,277 tons, or less than 1 per cent. On a daily rate basis at 186,080 tons, the July rate was 9222 tons, or 4.7

per cent, under the record high of May. Output of July, 1928, the previous high July, was 3,805,598 tons, or more than 1,000,000 tons below July, 1929.

Open-hearth production in July fell off 1.7 per cent from that of June. Bessemer output, however, increased 4.4 per cent over June, but is still under May. However, in both May and July, the Bessemer output was 14.2 per cent of the total reported.

These data relate to open-hearth

and Bessemer ingots only, because electric and crucible steel ingots are not now reported monthly by the institute. In 1928 ingots of these two types of steel amounted to 460,208 tons. This figures out to an average of about 1480 tons a day. Some such total would have to be added to each of the recent daily averages to obtain the total quantity of steel ingots made by American furnaces.

Particulars for the past 19 months are shown in the table. The diagram traces the course of ingot production and finished steel prices over the past eight years and seven months.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS  
(GROSS TONS)

1928 Months	Open- Hearth	Bessemer	Calcu- lated Monthly Output All Companies	No. of Working Days	Approx- imate Daily Output All Companies
January	3,273,294	498,691	3,990,902	26	153,496
February	3,300,407	521,250	4,043,457	25	161,738
March	3,632,648	567,330	4,507,217	27	166,934
April	3,505,104	564,110	4,305,382	25	172,215
May	3,394,301	582,128	4,267,212	27	158,823
June	3,010,341	528,193	3,743,903	26	143,996
July	3,068,257	528,588	3,805,598	25	152,224
Seven months	23,244,352	3,790,290	28,693,671	181	158,031
August	3,379,625	569,771	4,178,616	27	154,763
September	3,375,654	544,710	4,147,893	25	165,916
October	3,795,800	599,098	4,649,968	27	172,221
November	3,442,112	590,669	4,266,835	26	164,109
December	3,301,114	496,679	4,018,208	25	160,728
Total	40,538,657	6,591,217	49,865,185	311	160,338
1929					
January	3,694,218	549,616	4,490,354	27	166,309
February	3,599,224	489,279	4,326,000	24	180,250
March	4,183,869	596,691	5,058,258	26	194,548
April	4,026,576	640,351	4,938,925	26	189,924
May	4,276,186	707,484	5,273,167	27	195,302
June	3,920,798	622,585	4,881,370	25	195,255
July	3,922,532	649,950	4,838,093	26	186,080
Seven months	27,693,403	4,255,956	33,805,267	181	186,769

## Iron and Steel Employment Rose in June

WASHINGTON, Aug. 13. — While employment in manufacturing industries in June declined 0.4 per cent and the payroll totals fell off 1.9 per cent as compared with May, employment in 206 iron and steel establishments rose to 286,815 from 286,103, a gain of 0.2 per cent while the weekly payroll declined 1.8 per cent to \$9,415,266, from \$9,590,202, according to the Bureau of Labor Statistics, Department of Labor. With the monthly average for 1926 equaling 100, the bureau's weighted index of employment in manufacturing industries for June, 1929, was 98.8 as compared with 99.2 for May and 93.1 for June, 1928. The weighted index of payroll totals for June of the present year was 102.8 as compared with 104.8 for May and 94.2 for June of last year.

# Iron and Steel Markets

## Steel Output Continues to Taper

Production Shows Further Slight Decline as Mill Backlogs

Undergo Seasonal Reduction—Alabama

Pig Iron Sold at \$12.50

SEASONAL curtailment is making itself felt in the steel industry, but thus far the chief effects have been a decline in backlogs and a shortening of deliveries. Production has shown little reduction and the downward trend is not marked.

With the two largest steel producers still operating at close to rated ingot capacity, most of the loss in output is accounted for by other mills. In the Greater Pittsburgh district the total falling off since the first of the month is estimated at 5 per cent, and similar recessions are reported in some other centers. Chicago, on the other hand, reflecting an unusual demand for plates for pipe manufacture, continues to produce steel at a capacity rate.

The return to hand-to-mouth buying, heretofore mainly evident in lighter rolled products, is being more widely felt. At Pittsburgh, deliveries on shapes and bars can now be made in two or three weeks. This change is not necessarily of great significance. The experience of the industry in recent years is ample proof that a high rate of output can be maintained without heavy forward obligations. Undoubtedly the vacation season, now at its height, is also a factor in delaying purchasing programs.

The growth of miscellaneous uses for mill products has made it more difficult to gage the trend of steel consumption. At the same time the wide diversification of demand makes for a more even flow of business, with increased consumption in some directions tending to neutralize declines in others.

Among new outlets for steel the most outstanding in its stabilizing influence is the manufacture of pipe for gas and oil lines. This factor has been most important at Chicago, where steel bookings for the week were the sixth largest so far this year.

While the sharply reduced requirements of the automobile industry, the largest single consuming group, are not to be overlooked, Cleveland reports an upturn in specifications from a number of motor car makers who are bringing out new models. Whether this can be taken as an augury of general recovery in automotive demand is uncertain, in view of the large stocks of used cars reported in dealers' hands.

Railroads placed 75 per cent of the fabricated steel work awarded during the week, which totaled 43,000 tons. Outstanding transactions were 14,500 tons for two Pennsylvania Railroad bridges across the Hackensack River in New Jersey and 9400 tons for a New York subway section. Fresh inquiries call for 42,000 tons, of which 16,000 tons is for railroad and highway bridges.

The railroad equipment market is also more active, with new inquiries out for 1300 freight cars.

Rail production, now at 75 per cent at Chicago—an unusually high rate for August—will shortly undergo a seasonal reduction, which, however, is expected to be the last downward revision of schedules before the fall buying movement sets in. Seasonal curtailment in tin plate output is also looked for.

Aside from the more general prevalence of \$2.40, Pittsburgh or Cleveland, on plain wire, steel prices have undergone no further change. The sharp gain in profits that has accompanied peak production is recognized, however, as a temptation to press for tonnage to the detriment of price stability.

Pig iron demand has improved at St. Louis, with buying of 25,000 tons of basic grade, and in the New York district, with sales of 22,000 tons. Foundry melt is well sustained except in the South, where the reduced operations of cast iron pipe makers are a factor, and in the Central West, where the declining requirements of the automotive industry are felt. Shipments from some northern Ohio blast furnaces are running 15 to 20 per cent under those of July.

Aggressive selling of Alabama iron has further accentuated competition in Northern markets. Southern foundry iron is now being freely quoted at \$13, Birmingham, for deliveries in the Chicago district, and that price has been shaded 50c. a ton in one large transaction. The attention of Southern producers has also been turned to Europe, following the receipt of inquiries for pig iron for shipment to Italy.

Heavy melting scrap at Pittsburgh has advanced 50c. a ton on a large sale to a consumer. In face of this evidence of strength, shipments have been held up by two users and rejections are more frequent.

Steel ingot production in July, at 4,838,093 tons, was a record for that month, exceeding the previous July peak, last year, by more than 1,000,000 tons. The daily rate for July, at 186,080 tons, represented a decline of 4.7 per cent from the record rate of May, but was slightly higher than the average for the preceding six months. Output for the first seven months of the year was 18 per cent larger than for the corresponding period in 1928.

THE IRON AGE composite price for finished steel declined to 2.398c. a lb., from 2.412c., the figure at which it has held since March. The pig iron composite remains for the second week at \$18.42 a gross ton.



# A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	Aug. 13, 1929	Aug. 6, 1929	July 16, 1929	Aug. 14, 1928
No. 2 fdy., Philadelphia.....	\$21.26	\$21.26	\$21.76	\$20.26
No. 2, Valley furnace.....	18.50	18.50	18.50	16.50
No. 2, Southern, Cin'tl.....	17.69	17.69	17.69	19.19
No. 2, Birmingham.....	14.50	14.50	14.50	15.50
No. 2 foundry, Chicago*.....	20.00	20.00	20.00	17.50
Basic, del'd eastern Pa.....	19.75	19.75	20.25	19.00
Basic, Valley furnace.....	18.50	18.50	18.50	16.00
Valley Bessemer, del'd P'gh..	20.76	20.76	20.76	18.76
Malleable, Chicago*.....	20.00	20.00	20.00	17.50
Malleable, Valley.....	19.00	19.00	19.00	17.00
Gray forge, Pittsburgh.....	19.76	19.76	19.76	18.01
L. S. charcoal, Chicago.....	27.04	27.04	27.04	27.04
Ferromanganese, furnace.....	105.00	105.00	105.00	105.00

Rails, Billets, etc., Per Gross Ton:	Aug. 13, 1929	Aug. 6, 1929	July 16, 1929	Aug. 14, 1928
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.00
Rerolling billets, Pittsburgh.	35.00	35.00	35.00	32.00
Sheet bars, Pittsburgh.....	35.00	35.00	35.00	32.00
Slabs, Pittsburgh.....	35.00	35.00	35.00	32.00
Forging billets, Pittsburgh...	40.00	40.00	40.00	38.00
Wire rods, Pittsburgh.....	42.00	42.00	42.00	42.00
Skelp, grvd. steel, P'gh, lb...	1.85	1.85	1.85	1.90

Finished Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.95	1.95	1.95	1.90
Bars, Chicago.....	2.05	2.05	2.05	2.00
Bars, Cleveland.....	1.95	1.95	1.95	1.85
Bars, New York.....	2.29	2.29	2.29	2.24
Tank plates, Pittsburgh.....	1.95	1.95	1.95	1.90
Tank plates, Chicago.....	2.05	2.05	2.05	2.00
Tank plates, New York.....	2.22½	2.22½	2.22½	2.17½
Structural shapes, Pittsburgh	1.95	1.95	1.95	1.90
Structural shapes, Chicago...	2.05	2.05	2.05	2.00
Structural shapes, New York	2.19½	2.19½	2.19½	2.14½
Cold-finished bars, Pittsburgh	2.30	2.30	2.30	2.10
Hot-rolled strips, Pittsburgh.	1.90	1.90	1.90	1.75
Cold-rolled strips, Pittsburgh	2.75	2.75	2.75	2.90

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Finished Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh...	2.85	2.85	2.85	2.65
Sheets, black, No. 24, Chicago	dist. mill.....	2.95	3.05	3.05
Sheets, galv., No. 24, P'gh...	3.50	3.50	3.60	3.40
Sheets, galv., No. 24, Chicago	dist. mill.....	3.60	3.80	3.80
Sheets, blue, No. 13, P'gh...	2.35	2.35	2.35	2.10
Sheets, blue, No. 13, Chicago	dist. mill.....	2.45	2.45	2.45
Wire nails, Pittsburgh.....	2.55	2.55	2.65	2.55
Wire nails, Chicago dist. mill	2.60	2.60	2.70	2.60
Plain wire, Pittsburgh.....	2.40	2.50	2.50	2.40
Plain wire, Chicago dist. mill	2.45	2.55	2.55	2.45
Barbed wire, galv., Pittsburgh	3.20	3.20	3.30	3.20
Barbed wire, galv., Chicago	dist. mill.....	3.30	3.30	3.25
Tin plate, 100 lb. box, P'gh...	\$5.35	\$5.35	\$5.35	\$5.25

Old Material, Per Gross Ton:	Aug. 13, 1929	Aug. 6, 1929	July 16, 1929	Aug. 14, 1928
Heavy melting steel, P'gh...	\$19.25	\$18.75	\$18.50	\$15.50
Heavy melting steel, Phila...	16.50	16.50	16.50	13.00
Heavy melting steel, Ch'go...	15.00	14.75	14.75	12.75
Carwheels, Chicago.....	14.00	14.00	14.00	12.75
Carwheels, Philadelphia.....	16.50	16.50	16.50	15.50
No. 1 cast, Pittsburgh.....	15.50	15.50	15.50	14.50
No. 1 cast, Philadelphia.....	16.50	16.50	16.50	15.50
No. 1 cast, Ch'go (net ton)...	14.50	14.50	14.50	14.00
No. 1 RR. wrot., Phila.....	16.00	16.00	16.00	13.50
No. 1 RR. wrot., Ch'go (net)	14.00	13.50	13.50	11.00

Coke, Connellsville, Per Net Ton at Oven:	Aug. 13, 1929	Aug. 6, 1929	July 16, 1929	Aug. 14, 1928
Furnace coke, prompt.....	\$2.75	\$2.75	\$2.75	\$2.75
Foundry coke, prompt.....	3.75	3.75	3.75	3.75

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	18.12½	18.12½	18.12½	14.75
Electrolytic copper, refinery...	17.75	17.75	17.75	14.50
Tin (Straits), New York.....	46.37½	47.25	47.25	48.25
Zinc, East St. Louis.....	6.80	6.80	6.70	6.25
Zinc, New York.....	7.15	7.15	7.05	6.60
Lead, St. Louis.....	6.55	6.55	6.55	6.00
Lead, New York.....	6.75	6.75	6.75	6.20
Antimony (Asiatic), N. Y. ...	8.75	8.75	8.25	10.00

## Pittsburgh

### Notable Activity in Plates, Sheets and Cold-Rolled Strip—Advances in Scrap

PITTSBURGH, Aug. 13.—Steel operations in this and nearby districts have not declined materially in the last week and the total falling off since the first of the month probably does not amount to 5 per cent. As the industry entered August running at an average of about 95 per cent of capacity, such a decline amounts to very little when applied to aggregate production of steel. However, the tendency toward curtailment is continuing and there is no longer any doubt of the fact that the long delayed period of summer retrenchment is beginning. It is equally true that the curtailment is much less pronounced than usual and that the steel industry is in a much more prosperous condition than it ordinarily is at this time of the year.

The volume of specifications so far this month seems to be less than July, although notable exceptions are plates, sheets and cold-rolled strip. The leading sheet maker has received shipping orders in August at a higher rate than during July and one or two leading independents report similar activity. Other companies have felt the slump in automotive demand more severely and the Ford Motor Co. is the only one of the larger motor car builders which has not reduced its steel requirements. One or two important automobile makers are now getting into production on new models, but

the steel industry as a whole is not feeling any appreciable increase in the requirements of this important consuming channel. The notable thing about steel demand at this time is its wide diversification and sustained strength in the face of declining requirements by the largest consuming industry.

Sheet mills in the district have at least a month's operations scheduled and the same is now true of cold-rolled strip, for which demand seems to have improved in the last two weeks. This has resulted in stronger prices and the market is again quot-

able at 2.75c. to 2.85c., Pittsburgh. Sheet prices are not quotably weaker, and although the market is still soft, some makers are taking a firmer stand on prices. Wire nails are weak, but in this district this softness has not extended to wire products. In other lines prices are holding at the quoted levels.

Sales of billets, slabs and sheet bars have been made at \$35, Pittsburgh, and although mills have contract business on their books at lower figures for billets and slabs, the market on spot tonnages is not less than \$35.

The pig iron market is dull, sales being confined almost entirely to small tonnages for immediate shipments. Contract shipments are not so heavy as they were in July and some stacks are beginning to build up stocks again.

The scrap market has developed added strength in the last week, a large tonnage of No. 1 heavy melting steel having been sold at \$19.50. This is an advance of 50c. a ton over recent levels and strength is also reflected in other grades of scrap.

Pig Iron.—Buying is at a standstill with the exception of small tonnages, usually required for immediate shipment. A few lots of basic iron have been sold since the first of the month,

but no purchases of more than 1000 tons have been reported. Large users of basic iron have sufficient tonnage on contract to last them for several weeks, and fill-in orders are few and far between. Shipments are keeping up fairly well but are not as heavy as they were last month. The dullness of the market is beginning to be reflected in growing furnace stocks, and in no case are local or Valley stacks building up their backlogs. However, it seems fairly certain that large tonnages of iron will be placed in September for delivery during the closing months of the year, particularly if foundry activity is accelerated by that time. The price situation is the brightest spot in the market, with all quotations apparently holding. Basic and foundry iron are being sold regularly in small lots at \$18.50, Valley, and malleable and Bessemer are unchanged at \$19. The local Pittsburgh furnace is quoting prices 50c. above these levels.

*Prices per gross ton, f.o.b. Valley furnace:*

Basic	\$18.50
Bessemer	19.00
Gray forge	18.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	19.00
Low phosph. copper free	27.00

Freight rate to Pittsburgh or Cleveland district, \$1.75.

*Prices per gross ton, f.o.b. Pittsburgh district furnaces:*

Basic	\$19.00
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	19.50

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

**Semi-Finished Steel.**—Production of crude steel has not declined very much in this district, but the requirements of non-integrated finishing mills are not as large as they were, and larger companies are having their first opportunity in several months to build up their reserves of this material. It is probable that open-hearth production will not fall far below recent levels during August, as the taking out of a few furnaces by the smaller companies does not seriously affect the total output of the district, particularly when this output is at such high levels. Spot sales of semi-finished steel are not fre-

quent, but the larger consumers are getting steel regularly on contract, in some cases at the same prices which prevailed during the second quarter. However, the \$35, Pittsburgh or Youngstown, quotation seems to be holding on current small tonnages and if there have been contract renewals on billets and slabs at a lower figure the transactions have been made very quietly. On sheet bars the contract price was not changed, having remained at \$35. Shipments of wire rods are holding up fairly well, although a few consumers who make products going largely to the automotive industry are not quite so active. The price is well established at \$42, Pittsburgh or Cleveland.

**Bars, Shapes and Plates.**—The heavy hot-rolled products are still accounting for the high production schedules in many mills, but shipping orders on bars and shapes have declined to a point where an improvement in business will soon be necessary if this condition is to be continued. Most mills can make deliveries on bars and shapes in two or three weeks. Demand for bars is rather well diversified and the requirements of cold-finishing departments show no further curtailment. Structural awards in the district are not heavy, but a fair amount of bridge work is being placed from time to time and 1300 tons of steel was recently taken for an addition to the United States Aluminum plant at New Kensington, Pa. Considerable prospective work, which has not reached the stage of definite inquiry, is before the trade, and with the large fabricating shops in the district operating at a high rate, the outlook is generally favorable. Plate business is still exceeding all expectations and current shipping orders allow mills little opportunity to improve on deliveries. However, consumers are more farsighted than they were earlier in the year in making known their requirements and the pressure for deliveries is abating to some extent. Prices seem to be holding on the general run of business, the quotation on bars, shapes and plates being 1.95c., Pittsburgh.

**Rails and Track Supplies.**—The market is now without sizable inquiries, although the New York, New Haven & Hartford has not fully closed against its recent inquiry for accessories. Specifications are gradually tapering off, but supplementary purchases are being made from time to time and the market is not entirely devoid of activity. Prices are generally satisfactory, although the \$36, Pittsburgh, price on light rails from billets is occasionally being shaded \$2 a ton to meet the competition of the rerolled product.

**Bolts, Nuts and Rivets.**—Demand is keeping up unusually well for this time of the year and the industry is probably operating at about 60 per cent of capacity. Railroad car builders in the district are still taking large tonnages, although the railroads themselves have become less active as buyers. Demand from the jobbing industry is keeping up. Prices are well established at 70 per cent off list for bolts and nuts and \$3.10 per 100 lb., Pittsburgh, for large rivets.

**Wire Products.**—Shipments of manufacturers wire show little if any decline from July levels and are considerably ahead of the usual average for this time of the year. Present specifications indicate little curtailment in the near future. On plain wire for manufacturing purposes prices are holding at 2.50c. to 2.60c., Pittsburgh. Reports of shading these quotations on wire for jobbers are not confirmed in this district. The nail market is unchanged, with prices weak and demand quiet. On the general run of business the ruling quotations range from \$2.55 to \$2.65 per keg.

**Tubular Goods.**—Lap-weld mills in this and the Valley district are now fairly well scheduled for several weeks and the position of seamless units is even better. No large pipe line awards have been reported during the last week, but the largest of these projects, a line running into Chicago from the Texas Panhandle, is expected to be placed this month. Other large prospective jobs seem to be in a rather indefinite state. Specifications for mechanical tubing have

## THE IRON AGE Composite Prices

### Finished Steel

Aug. 13, 1929, 2.398c. a Lb.

One week ago	2.412c.
One month ago	2.412c.
One year ago	2.348c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

	High		Low
1929	2.412c., April 21	2.391c., Jan. 8	
1928	2.391c., Dec. 11	2.314c., Jan. 3	
1927	2.453c., Jan. 4	2.293c., Oct. 25	
1926	2.453c., Jan. 5	2.403c., May 18	
1925	2.569c., Jan. 6	2.396c., Aug. 18	

### Pig Iron

Aug. 13, 1929, \$18.42 a Gross Ton

One week ago	\$18.42
One month ago	18.54
One year ago	17.04
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low
1929	\$18.71, May 14	\$18.29, March 19	
1928	18.59, Nov. 27	17.04, July 24	
1927	19.71, Jan. 4	17.54, Nov. 1	
1926	21.54, Jan. 5	19.46, July 13	
1925	22.50, Jan. 13	18.96, July 7	

# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.95c.
F.o.b. Chicago.....	2.05c.
Del'd Philadelphia.....	2.27c.
Del'd New York.....	2.29c.
Del'd Cleveland.....	1.92 $\frac{1}{2}$ c. to 1.95c.
F.o.b. Cleveland.....	1.90c. to 1.95c.
F.o.b. Lackawanna.....	2.05c.
F.o.b. Birmingham.....	2.15c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

### Billet Steel Reinforcing

F.o.b. Pittsburgh mills, 40, 50, 60-ft.....	2.05c.
F.o.b. Pittsburgh mills, cut lengths.....	2.30c.
F.o.b. Birmingham, mill lengths.....	2.15c.

### Rail Steel

F.o.b. mills, east of Chicago dist.....	1.85c. to 1.90c.
F.o.b. Chicago Heights mill.....	1.95c.
Del'd Philadelphia.....	2.27c.

### Iron

Common iron, f.o.b. Chicago.....	2.05c.
Refined iron, f.o.b. P'gh mills.....	2.55c.
Common iron, del'd Philadelphia.....	2.12c.
Common iron, del'd New York.....	2.14c.

## Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.95c.
F.o.b. Chicago.....	2.05c.
F.o.b. Birmingham.....	2.15c.
Del'd Cleveland.....	2.14c.
Del'd Philadelphia.....	2.15c.
F.o.b. Coatesville.....	2.05c.
F.o.b. Sparrow Point.....	2.05c.
F.o.b. Lackawanna.....	2.05c.
Del'd New York.....	2.22 $\frac{1}{2}$ c.
C.i.f. Pacific ports.....	2.35c.

## Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.95c.
F.o.b. Chicago.....	2.05c.
F.o.b. Birmingham.....	2.15c.
F.o.b. Lackawanna.....	2.05c.
F.o.b. Bethlehem.....	2.05c.
Del'd Cleveland.....	2.14c.
Del'd Philadelphia.....	2.01c. to 2.06c.
Del'd New York.....	2.14 $\frac{1}{2}$ c.
C.i.f. Pacific ports.....	2.35c.

## Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, P'gh.....	2.00c.
Wider than 6 in., P'gh.....	1.90c.
6 in. and narrower, Chicago.....	2.20c.
Wider than 6 in., Chicago.....	2.10c.
Cooperage stock, P'gh.....	2.20c.
Cooperage stock, Chicago.....	2.30c.

## Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill.....	2.30c.
Bars, f.o.b. Chicago.....	2.30c.
Bars, Cleveland.....	2.35c.
Shafting, ground, f.o.b. mill.....	2.65c. to 3.60c.
Strips, P'gh.....	2.75c. to 2.85c.
Strips, Cleveland.....	2.75c. to 2.85c.
Strips, del'd Chicago.....	3.05c. to 3.15c.
Strips, Worcester.....	2.90c. to 3.00c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland.....	4.25c.

\*According to size.

## Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland, to jobbers and retailers.)

	Base per Keg
Wire nails.....	\$2.55 to \$2.65
Galvanized nails.....	4.55 to 4.65
Galvanized staples.....	3.25 to 3.35
Polished staples.....	3c. to 3.10c.
Cement coated nails.....	\$2.55 to \$2.65

	Base per 100 Lb.
Bright plain wire, No. 6 to No. 9 gage.....	\$2.40 to \$2.50
Annealed fence wire.....	2.55 to 2.65
Spring wire.....	3.50 to 3.60
Gal'd wire, No. 9.....	3.00 to 3.10
Barbed wire, gal'd.....	3.20 to 3.30
Barbed wire, painted.....	2.95 to 3.05
Woven wire fence (per net ton to retailers).....	65.00

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass. (wire), mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

## Cut Nails

	Per 100 Lb.
Carloads, Wheeling, Reading or Northumberland, Pa.....	\$2.70
Less carloads, Wheeling or Reading.....	2.80

## Light Plates

No. 10, blue annealed, f.o.b. P'gh.....	2.10c. to 2.20c.
No. 10, blue annealed, f.o.b. Chicago dist.....	2.30c.
No. 10, blue annealed, del'd Phila.....	2.42c. to 2.52c.
No. 10, blue annealed, B'ham.....	2.35c.

## Sheets

### Blue Annealed

	Base per Lb.
No. 13, f.o.b. P'gh.....	2.25c. to 2.35c.
No. 13, f.o.b. Chicago dist.....	2.45c.
No. 13, del'd Philadelphia.....	2.67c.
No. 13, blue annealed, B'ham.....	2.50c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.85c.
No. 24, f.o.b. Chicago dist. mill.....	2.95c. to 3.05c.
No. 24, del'd Philadelphia.....	3.17c. to 3.27c.
No. 24, f.o.b. Birmingham.....	3.00c. to 3.10c.

### Metal Furniture Sheets

No. 24, f.o.b. P'gh.....	4.10c. to 4.20c.
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### Galvanized

No. 24, f.o.b. Pittsburgh.....	3.50c. to 3.60c.
No. 24, f.o.b. Chicago dist. mill.....	3.60c. to 3.70c.
No. 24, del'd Cleveland.....	3.59c. to 3.69c.
No. 24, del'd Philadelphia.....	3.92c. to 4.02c.
No. 24, f.o.b. Birmingham.....	3.75c. to 3.85c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	2.90c. to 3.00c.
No. 28, f.o.b. Chicago dist. mill.....	3.00c. to 3.10c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.10c.
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### Long Tenes

No. 24, 8-lb. coating, f.o.b. mill.....	4.00c.
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### Vitreous Enameling Stock

No. 24, f.o.b. Pittsburgh.....	3.90c.
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## Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.35
Standard cokes, f.o.b. Gary.....	5.45

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)  
(Per Package, 20 x 28 in.)

8-lb. coating I.C. \$11.20	25-lb. coating I.C. \$16.70
15-lb. coating I.C. 14.00	30-lb. coating I.C. 17.75
20-lb. coating I.C. 15.20	40-lb. coating I.C. 19.85

## Alloy Steel Bars

(F.o.b. makers' mill)

Alloy Quality Bar Base, 2.65c. to 2.75c. per Lb.	Alloy Differential
S.A.E. Series	
Numbers	
2000 (1 $\frac{1}{2}$ % Nickel).....	0.25
2100 (1 $\frac{1}{2}$ % Nickel).....	0.55
2300 (3 $\frac{1}{2}$ % Nickel).....	1.50
2500 (5% Nickel).....	2.25
3100 Nickel Chromium.....	0.55
3200 Nickel Chromium.....	1.35
3300 Nickel Chromium.....	3.80
3400 Nickel Chromium.....	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum).....	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum).....	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel).....	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium).....	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium).....	0.45
5100 Chromium Spring Steel.....	0.20
6100 Chromium Vanadium Bars.....	1.20
6100 Chromium Vanadium Spring Steel.....	0.95
9250 Silicon Manganese Spring Steel (flats).....	0.25
Rounds and squares.....	0.50
Chromium Nickel Vanadium.....	1.50
Carbon Vanadium.....	0.95

Above prices are for hot rolled steel bars, forcing quality. The ordinary differential for cold-drawn bars is  $\frac{3}{4}$ c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 $\frac{1}{2}$  in. thick, regardless of sectional area, take the bar price.

## Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	34.00
Light (from billets), f.o.b. Ch'go mill.....	36.00

## Track Equipment

	Base per 100 Lb.
Spikes, $\frac{3}{4}$ in. and larger.....	\$2.80
Spikes, $\frac{1}{2}$ in. and smaller.....	2.80
Spikes, bolt and barge.....	3.00
Tie plate, steel.....	2.15

Angle bars.....	\$2.75
Track bolts, to steam railroads.....	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count.....	70 per cent off list.

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld			Iron		
Steel	Black	Galv.	Inches	Black	Galv.
1 $\frac{1}{2}$ to 2.....	45	19 $\frac{1}{2}$	1 $\frac{1}{2}$ and 2.....	+11	+36
2 $\frac{1}{2}$ to 3.....	51	25 $\frac{1}{2}$	2 $\frac{1}{2}$ .....	23	5
3 $\frac{1}{2}$ to 4.....	56	42 $\frac{1}{2}$	3 $\frac{1}{2}$ .....	28	11
4 $\frac{1}{2}$ to 6.....	60	48 $\frac{1}{2}$	1 and 1 $\frac{1}{2}$ .....	31	15
6 to 8.....	62	50 $\frac{1}{2}$	1 $\frac{1}{2}$ and 2.....	35	18
Lap Weld			Lap Weld		
2.....	55	43 $\frac{1}{2}$	2.....	23	9
2 $\frac{1}{2}$ to 3.....	59	47 $\frac{1}{2}$	2 $\frac{1}{2}$ to 3 $\frac{1}{2}$ .....	28	13
3 and 4.....	56	43 $\frac{1}{2}$	4 to 6.....	30	17
6 and 8.....	54	42 $\frac{1}{2}$	7 and 8.....	29	16
11 and 12.....	53	40 $\frac{1}{2}$	9 to 12.....	26	11
Butt Weld, extra strong, plain ends			Butt Weld, extra strong, plain ends		
1 $\frac{1}{2}$ to 2.....	41	24 $\frac{1}{2}$	1 $\frac{1}{2}$ and 2.....	+13	+48
2 $\frac{1}{2}$ to 3.....	47	30 $\frac{1}{2}$	2 $\frac{1}{2}$ .....	23	7
3 $\frac{1}{2}$ to 4.....	53	42 $\frac{1}{2}$	3 $\frac{1}{2}$ .....	28	12
4 $\frac{1}{2}$ to 6.....	58	47 $\frac{1}{2}$	1 to 2.....	34	18
6 to 8.....	60	49 $\frac{1}{2}$			
9 to 10.....	61	50 $\frac{1}{2}$			
11 and 12.....	44	31 $\frac{1}{2}$			
Lap Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
2.....	53	42 $\frac{1}{2}$	2.....	29	13
2 $\frac{1}{2}$ to 4.....	57	46 $\frac{1}{2}$	2 $\frac{1}{2}$ to 4.....	34	20
4 $\frac{1}{2}$ to 6.....	56	45 $\frac{1}{2}$	4 $\frac{1}{2}$ to 6.....	33	19
7 to 8.....	52	39 $\frac{1}{2}$	7 and 8.....	31	17
9 and 10.....	45	32 $\frac{1}{2}$	9 to 12.....	21	8
11 and 12.....	44	31 $\frac{1}{2}$			

On carloads the above discounts on steel pipe are increased on block by one point, with supplementary discount of 5%, and on galvanized by 1 $\frac{1}{2}$  points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2 $\frac{1}{2}$ %.  
Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 $\frac{1}{2}$  points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2 $\frac{1}{2}$ in.....	40
2 $\frac{1}{2}$ in.—2 $\frac{3}{4}$ in.....	48
3 in.....	54
3 $\frac{1}{2}$ in.—3 $\frac{3}{4}$ in.....	56
4 in.....	59
4 $\frac{1}{2}$ in. to 6 in.....	48
1 $\frac{1}{2}$ in.....	1
1 $\frac{3}{4}$ in.....	8
2 in.—2 $\frac{1}{4}$ in.....	13
2 $\frac{1}{2}$ in.—2 $\frac{3}{4}$ in.....	16
3 in.....	17
3 $\frac{1}{2}$ in. to 3 $\frac{3}{4}$ in.....	20
4 in.....	18
4 $\frac{1}{2}$ in.....	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:  
Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

### Standard Commercial Seamless Boiler Tubes

Cold Drawn	
1 in.....	63
1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ in.....	55
1 $\frac{3}{4}$ in.....	39
2 to 2 $\frac{1}{4}$ in.....	34
2 $\frac{1}{2}$ to 2 $\frac{3}{4}$ in.....	42
3 in.....	48
3 $\frac{1}{4}$ to 3 $\frac{1}{2}$ in.....	50
4 in.....	53
4 $\frac{1}{2}$ , 5 and 6 in.....	42

### Hot Rolled

2 and 2 $\frac{1}{4}$ in.....	40
2 $\frac{1}{2}$ and 2 $\frac{3}{4}$ in.....	48
3 in.....	54
3 $\frac{1}{4}$ to 3 $\frac{1}{2}$ in.....	56
4 in.....	59
4 $\frac{1}{2}$ , 5 and 6 in.....	48

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage take mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base (carloads).....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	



fallen off slightly in recent weeks on account of a lighter demand from the automobile industry. Boiler tubes are moving steadily.

**Sheets.**—Reports of current sheet demand are mixed. While at least one large producer has had shipping orders thus far in August slightly ahead of the daily average during July, a number of others report declines in specifications. The Ford Motor Co. seems to be the only large automobile maker which has not reduced its requirements in recent weeks, although one or two large interests are now getting into production on new models. However, demand is diversified and mills generally have sufficiently large backlogs on most of the finishes to assure a high rate of production for a month or more. On the blue annealed product delivery promises are extended for six or eight weeks. Some makers of automobile body sheets have caught up on their commitments and are able to make comparatively prompt shipments. The leading interest is operating its sheet mills at about 96 per cent of capacity and the larger independents average from 90 to 95 per cent. Prices have not achieved stability, but the tendency toward weakness is not so pronounced as it was two or three weeks ago. The galvanized product is quotable at 3.50c. to 3.60c., Pittsburgh, and black at 2.85c. Lower figures are reported occasionally, but are not common enough to be representative of the market. Light plates are unchanged at 2.10c. to 2.20c., the lower figure representing the competition of wide strip mills which are occasionally making even lower quotations. No deviations from the 2.35c., Pittsburgh, price on blue annealed sheets, No. 13 gage, are reported in this district. Tin mill black plate is still quotable at 2.90c. to 3c., Pittsburgh.

**Tin Plate.**—The market is exceedingly quiet, but week to week business is still sufficient to justify a high rate of operation. The leading interest is running its mills at about 86 per cent of capacity and at least two of the larger independents are at a somewhat higher rate. However, future prospects are not particularly good and the decline in container manufacturers' requirements which is to be expected at this time of the year will hardly be delayed much longer. Crop reports are mixed and tin plate makers are wondering whether the somewhat exaggerated estimates made by the canning companies on some crops will be offset by improvement in other lines.

**Strip Steel.**—Hot-rolled strip mills are in need of business and the light demand of recent weeks is beginning to be reflected in decreased operations. Specifications continue to decline and expected improvement from the automobile industry has not yet made itself felt. On the cold-rolled product, however, demand is considerably better and shows indications of continued improvement. Some makers have their mills scheduled for

several weeks at close to capacity and shipments are more extended than they were a month ago. Cold-rolled strip prices are also continuing the recent tendency toward firmness. The market is again quotable at 2.75c. to 2.85c., Pittsburgh, as mills are again taking small tonnages at the higher price. On hot-rolled recent quotations are holding.

**Cold-Finished Steel Bars.**—This market is rather quiet, but demand is keeping up fairly well. Shipments can be made in about two weeks, with longer periods occasionally required for special sizes. With the exception of the automobile industry, there has been little decline in the requirements of the more important consuming lines and stocks of jobbers as well as makers are low. The price is holding at 2.30c., Pittsburgh.

**Coal and Coke.**—Production of furnace coke in the Connellsville district has declined slightly during the last week and the number of ovens in operation has dropped under the 3000 mark for the first time since early summer. Steel companies which were forced to supplement their own coke production by purchases in the open market at the time of heavy spring and early summer activity are now holding up shipments and further curtailment in the Connellsville region will probably be necessary to adjust supply to demand. Prices are holding at \$2.75 to \$2.85 per ton, Connellsville, with quotations 10c. to 15c higher asked for future delivery. The foundry coke market is dull with little buying and reduced shipments. Prices are soft on all except the premium grades which are firm at \$4.85, ovens. Coal production is slightly higher in the West Virginia and Kentucky fields, and to a lesser extent in Ohio and western Pennsylvania. Prices are still badly demoralized.

#### Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates .....	3.00c.
Structural shapes .....	3.00c.
Soft steel bars and small shapes .....	2.90c.
Reinforcing steel bars .....	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons .....	3.60c.
Squares and flats .....	4.10c.
Bands .....	3.25c.
Hoops .....	4.25c.
Black sheets (No. 24), 25 or more	
bundles .....	3.80c.
Galv. sheets (No. 24), 25 or more	
bundles .....	4.55c.
Light plates, blue ann'd (No. 10),	
1 to 10 plates .....	3.45c.
Blue annealed sheets (No. 13), 1 to	
10 sheets .....	3.60c.
Galv. corrug. sheets (No. 28), per	
square .....	\$4.43
Spikes, large .....	3.40c.
Small .....	3.80c. to 5.25c.
Boat .....	3.80c.
Track bolts, all sizes, per 100 count,	
60 per cent off list .....	
Machine bolts, 100 count, .....	
60 per cent off list .....	
Carriage bolts, 100 count, .....	
60 per cent off list .....	
Nuts, all styles, 100 count, .....	
60 per cent off list .....	
Large rivets, base per 100 lb. .....	\$3.50
Wire, black soft ann'd, base	
per 100 lb. ....	\$3.00 to 3.10
Wire, galv. soft, base per 100	
lb. ....	3.00 to 3.10
Common wire nails, per keg. ....	2.90 to 3.00
Cement coated nails, per keg .....	3.05

**Old Material.**—The scrap market has justified the strength of recent weeks, and No. 1 heavy melting steel is now quotable at \$19 to \$19.50 on the basis of a sale of several thousand tons to a Pittsburgh district consumer at the latter quotation. Hydraulic compressed sheets are also slightly stronger, small sales having been made at \$18.60 to \$18.75, representing an advance of 25c. over recent levels. This material is exceptionally scarce just now. The strength of the heavy melting steel market is also reflected in the high prices reported on the recent railroad lists, as a Youngstown dealer is said to have paid \$19.75 for the Baltimore & Ohio list to be shipped to a consumer in a nearby district. The Pennsylvania list apparently did not bring quite this much, but went at a figure which fully justifies the strength of the market. Good steel is apparently very hard to pick up in this district, and with most mills demanding the highest quality product, railroad steel is practically governing present market prices. Other grades of steel are also stronger. Short shoveling steel turnings have been sold at \$14 and perhaps higher, and machine shop turnings have advanced 50c. to a range of \$13 to \$13.50. Similar advances have been made in rails and also in specialties. In spite of the strength of the market, a number of bearish factors are at work. Hold-ups are in effect at at least two points and rejections are more frequent, particularly on grades of scrap which have been advancing most rapidly in the last few weeks. A number of large consumers are not buying, and the market is sustained by the high prices paid by two or three mills which are operating at capacity and requiring heavy shipments of scrap.

*Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:*

#### Basic Open-Hearth Grades:

No. 1 heavy melting steel	\$19.00 to \$19.50
No. 2 heavy melting steel	16.50 to 17.00
Scrap rails .....	18.50 to 19.00
Compressed sheet steel .....	18.50 to 18.75
Bundled sheets, sides and	
ends .....	17.00 to 17.50
Cast iron carwheels .....	16.50 to 17.00
Sheet bar crops, ordinary .....	20.00 to 20.25
Heavy breakable cast .....	13.00 to 13.50
No. 2 railroad wrought .....	19.00 to 19.50
Hvy. steel axle turnings .....	16.50 to 17.00
Machine shop turnings .....	13.00 to 13.50

#### Acid Open-Hearth Grades:

Railr. knuckles and couplers .....	22.00 to 22.50
Railr. coil and leaf springs .....	22.00 to 22.50
Rolled steel wheels .....	22.00 to 22.50
Low phos. billet and bloom	
ends .....	23.00 to 23.50
Low phos., mill plates .....	23.00 to 23.50
Low phos., light grades .....	20.50 to 21.50
Low phos., sheet bar crops .....	20.50 to 21.50
Heavy steel axle turnings .....	16.50 to 17.00

#### Electric Furnace Grades:

Low phos., punchings .....	20.00 to 21.00
Hvy. steel axle turnings .....	16.50 to 17.00

#### Blast Furnace Grades:

Short shoveling steel turn-	
ings .....	13.50 to 14.00
Short mixed borings and	
turnings .....	12.50 to 13.00
Cast iron borings .....	12.50 to 13.00

#### Rolling Mill Grades:

Steel car axles .....	21.50 to 22.00
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#### Cupola Grades:

No. 1 cast .....	15.00 to 16.00
Rails 3 ft. and under .....	20.00 to 21.00



# Chicago

## Specifications and Shipments in Balance—Plate Business, Partly for Pipe, Notably Heavy

CHICAGO, Aug. 13.—New orders for plates have again come to the fore to bring total sales of finished steel for the week to the sixth largest so far this year. Purchases of other steel commodities were also in good volume, this being especially true of bars. Pipe making accounts for the bulk of the plate tonnage, which is coming at an opportune time—midway between the third and fourth quarters.

Current specifications are fully equal to shipments and steel mill output remains at capacity. Mill stocks of cold iron are unusually small and scrap is playing an important role in ingot production.

Chicago rail mills will adjust schedules downward in the next ten days. Orders at hand, however, will sustain the then current operations until such time as producers can reasonably expect additional business for immediate rolling.

The Northern Pacific has ordered 300 flat cars and the Central of Georgia will buy 500 box cars. Evidence is stronger that additional purchases are to be made in the early fall.

Agricultural implement manufacturers are holding to a steady pace in production and they look forward with confidence, anticipating that high prices for farm products will sustain the farmers' buying power.

Little can be said of the structural market other than it is proving more active than had been anticipated by the trade. Current lettings are in fair volume, affording shops steady operations but no opportunity to build satisfying backlogs.

The iron and steel price structure is unaltered from a week ago. Quotations on the heavy tonnage commodities are steady while less certainty can be given to prices for wire and sheet mill products. Deliveries are improving, not so much on the score of lighter specifications but on account of the greater ease with which semi-finished steel can be allotted to finishing departments. With the change in this situation, local mills are again taking interest in small and miscellaneous tonnages, often fitting them into current rollings and so giving prompt deliveries.

**Ferroalloys.**—Shipments of these commodities remain in good volume but new buying is dull. Spiegeleisen is quoted \$32 to \$34 a ton, Hazard, Pa., and ferromanganese at \$105 a ton, seaboard.

*Prices delivered Chicago:* 80 per cent ferromanganese, \$112.50; 50 per cent ferrosilicon, \$82.50 to \$88.50; spiegeleisen, 19 to 21 per cent, \$40.76.

**Pig Iron.**—Chicago prices for Northern foundry iron are firm at \$20 a ton, local furnaces. New buying is in good volume, as melters continue to seek tonnages for delivery over the remainder of the year. A user in South Bend, Ind., will buy 1500 tons. Shipments are running a shade higher than in July. Relining of an Iroquois furnace has been set back and it is estimated now that this stack cannot be blown in before Sept. 1. Unex-

pected repairs have become necessary to the Federal furnace A and it was taken out of service Aug. 13 to be out until the first of the month. Merchant furnaces now in blast include two Iroquois, one Federal and Zenith stack at Duluth. The silvery market is quiet, as is also the charcoal iron market. Prices for Southern iron are weak.

### Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25...	\$20.00
N'th'n No. 1 fdy., sil. 2.25 to 2.75...	20.50
Malleable, not over 2.25 sil. ....	20.00
High phosphorus .....	20.00
Lake Super, charcoal, sil. 1.50 .....	27.04
S'th'n No. 2 fdy. (all rail) ..	\$19.01 to 20.01
Low phos., sil. 1 to 2, copper free ..	29.50
Silvery, sil. 8 per cent. ....	29.79
Bess. ferrosilicon, 14-15 per cent ..	46.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

**Structural Material.**—Awards for the week total close to 5000 tons and fresh inquiry more than makes up the tonnage withdrawn from the pending lists. The Chicago, Milwaukee, St. Paul & Pacific has ordered 2000 tons for new car shops at Milwaukee and 1200 tons for grade elimination work. J. B. French & Co. has the general contract for a 31-story garage for Chicago and about 3000 tons of steel will be needed for a power-house at Powerton, Ill. On the whole, structural shops are operating not far from a normal summer rate. Their backlogs are not large but the inflow of new business is ample to hold output at a steady rate. Shops have had little opportunity to build up stocks of steel and are dependent on mill deliveries for their needs.

*Mill prices on plain material, per lb.:* 2.05c. base, Chicago.

**Bars.**—Current specifications for mild steel bars are fully equal to shipments and local mills continue to produce at capacity. Demand from automobile and parts makers is steady, with some indication, according to the local trade, that improvement is not far in the future. Price reductions in some lines of automobiles are stimulating sales. On the other hand, some dealers find sales slow and the used car problem a serious one. Agricultural implement manufacturers hold to a steady rate of output and look forward to the future with confidence. There is a general feeling that notwithstanding small crops the higher prices obtained for them will sustain

the farmers' buying power and assure an active fall demand for farm machinery. The alloy steel bar market shows little change from a week ago. Spot buying is in fair size and specifications are in such volume that deliveries still range three to four weeks. There is a substantial demand for iron bars, part of which is no doubt brought about by the delivery situation in mild steel bars, these being two products which can be interchanged in many instances. Specifications for rail steel bars are a shade above shipments and deliveries range three to four weeks. The bed industry holds to a high rate of output and barn equipment manufacturers are enjoying a good mid-summer business. Interest in fence posts foretells the end of the summer lull in demand for this commodity.

**Wire Products.**—New orders for wire and nails are larger at the new levels of prices. August shipments continue to average larger than a year ago and wire mills are holding to a production rate of 65 per cent of capacity. Output still overbalances shipments, affording producers an excellent opportunity to round out stocks which they believe will be needed for the fall trade. Automobile manufacturers are taking steady quantities of wire. Jobbers from most parts of the country report a good summer demand except for woven wire fencing and steel posts.

**Cold-Rolled Strip.**—Specifications are in smaller total volume and barely support output at the new rate of 65 per cent of capacity. Producers' backlogs are large but the consumption of cold-rolled strips is undergoing a gradual decline. Prices are steady at 2.75c. to 2.85c. a lb., Cleveland, or 3.05c. to 3.15c. a lb., delivered Chicago.

**Rails and Track Supplies.**—Local rail mills, now producing at 75 per cent of capacity, will revise their schedules downward in the next ten days, but it is expected that this will be the last reduction necessary before fall purchases. There is some promise that a substantial tonnage will soon be bought for delivery this year. The Northern Pacific, which is in need of 15,000 tons, has not yet made definite inquiry. The light rail market is inactive. New purchases and fresh inquiry for track fastenings are the lowest in many weeks.

*Prices f.o.b. mill, per gross ton:* Standard section open-hearth and Bess. rails, \$43; light rails, rolled from billets, \$36. *Per lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

**Cast Iron Pipe.**—This market shows some improvement from the viewpoint of a larger volume of orders from contractors. Public inquiries and lettings are few and far between, with no indication now that conditions will improve in the immediate future. Warren Township, Mich., is reported to have placed 100,000 ft. of 6 and 8-in. pipe with the American Cast Iron Pipe Co., and Castlewood, S. D., has



awarded 10,000 ft. of 4 and 6-in. pipe to the McWane Cast Iron Pipe Co. The United States pipe company has taken 90,000 ft. of 6 and 8-in. pipe for Hamilton County, Ohio, and Simmons & Co., Bloomington, Ill., are low bidders at Peoria, Ill., where 500 tons of pipe and fittings will be needed for a sewage disposal plant.

Prices per net ton, del'd Chicago: Water pipe, 6-in. and over, \$45.20 to \$46.20; 4-in., \$49.20 to \$50.20; Class A and gas pipe, \$3 extra.

**Sheets.**—New business remains at a high level, with prices generally stable, with the exception of quotations on the galvanized commodity. Local producers expect to open fourth-quarter books in about two weeks. Light tank makers entered small specifications this week, while locker manufacturers are taking sheets in quantities which indicate capacity output. Shipments to the jobbing trade are lighter, a condition not unusual in the late summer.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 3.10c.; No. 24 galv., 3.65c. to 3.75c.; No. 10 blue ann'd, 2.35c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

**Plates.**—Prospects for additional railroad car business are good. Inquiries definitely in the market call for over 20,000 tons of steel exclusive of wheels and axles. The Chicago & North Western is asking for prices on 150 tram cars and will revive an old proposition involving 1000 to 2500 freight cars. The Santa Fe will take bids on 200 underframes and, according to reports, will buy cars in the early fall. The Southern lines of the Southern Pacific are said to be near the point of asking for prices. Although car orders were large in the first half of this year, the railroads have not benefited from these purchases to the extent that they had expected. Car shops, starting with small organizations, found the labor problem a serious one. Mill deliveries through the spring and to midsummer further retarded car building programs, with the net result that deliveries from shops have been slower than anticipated. Movement of grain in the Missouri Valley States and the demand for cars for bulk loading of materials is placing a strain on the supply of box cars suitable for grain loading and on the supply of gondola type of cars. Two users of oil storage tanks have placed orders that aggregate 4000 tons. The tanks will be fabricated in Chicago shops and shipped to the West and the Southwest. Fresh inquiry is for not less than 7000 tons, on which local shops are bidding. Pending business now totals over 12,000 tons. Oil storage tank business this year has been much more uniform than it was in 1928. On the whole the demand for plates is heavy and in the aggregate sales of finished steel during the week plate tonnage looms large. Deliveries cover a wide range. Plates in some speci-

cations cannot be had in less than nine to 12 weeks. The average on miscellaneous lots is six to eight weeks. Producers east of Chicago promise shipments in two to three weeks. More satisfactory allotment of semi-finished steel to finishing departments is enabling local mills to take odd lots and to give good deliveries when orders fit into rolling schedules.

**Reinforcing Bars.**—Awards during the week totaled close to 1500 tons, including 800 tons for a local office building and 450 tons for a Chicago public school. Fresh inquiries are light. The pending list still holds much promise in the way of tonnage, but on most of this business the quotations made are too low to permit satisfactory profits. Efforts to get better prices have not borne fruit. Most shops have small backlogs, and their need for business is proving an obstacle to price betterment. New contracts and fresh inquiries are given on page 442.

**Bolts, Nuts and Rivets.**—Railroads are again taking sizable quantities of these commodities. There is a fair demand for large rivets but specifications for light rivets are in small volume. Operations remain at 65 per cent of capacity and producers' stocks are growing.

**Coke.**—Shipments of by-product foundry coke continue to hold a small lead over the rate in July. Spot sales are scarce and prices are holding at \$8 a net ton, local ovens.

**Old Material.**—The Chicago scrap market is marking time, while consumers and sellers wage a contest over the subject of prices. Brokers continue to buy at prices that are 50c. to 75c. above those obtained on the most recent sales. Some of this tonnage is going against old orders but much of it will not be on track for some time, giving scrap dealers a span of time in which they hope to build up the price structure. In view of several weeks in which brokers have consistently paid higher prices

no more accurate statement can be made of the local market than that quotations are nominal. The available supply of cast iron borings is diminishing, as Michigan production moves East and output in northern Wisconsin is shipped to steel mills to the North. The Nickel Plate has closed a small list.

Prices deliv'd Chicago district consumers:

#### Per Gross Ton

Basic Open-Hearth Grades:	
Heavy melting steel.....	\$15.00 to \$15.50
Shoveling steel.....	15.00 to 15.50
Frogs, switches and guards, cut apart, and misc. rails	16.75 to 17.25
Hydral, compressed sheets	13.50 to 14.00
Drop forge flashings.....	10.50 to 11.00
No. 1 busheling.....	13.25 to 13.75
Forg'd cast and r'd steel carwheels.....	18.75 to 19.25
Railroad tires, chrg. box size.....	18.75 to 19.25
Railroad leaf springs cut apart.....	18.75 to 19.25
Acid Open-Hearth Grades:	
Steel couplers and knuckles	17.00 to 17.50
Coil springs.....	19.00 to 19.50
Electric Furnace Grades:	
Axle turnings.....	14.50 to 15.00
Low phos. punchings.....	16.75 to 17.25
Low phos. plates, 12 in. and under.....	16.75 to 17.25
Blast Furnace Grades:	
Axle turnings.....	10.75 to 11.25
Cast iron borings.....	10.25 to 10.75
Short shoveling turnings.....	10.25 to 10.75
Machine shop turnings.....	7.00 to 7.50
Rolling Mill Grades:	
Iron rails.....	16.00 to 16.50
Rerolling rails.....	17.75 to 18.25
Cupola Grades:	
Steel rails less than 3 ft.....	17.75 to 18.25
Steel rails less than 2 ft.....	18.25 to 18.75
Angle bars, steel.....	17.00 to 17.50
Cast iron carwheels.....	14.00 to 14.50
Malleable Grades:	
Railroad.....	17.00 to 17.50
Agricultural.....	15.50 to 16.00
Miscellaneous:	
*Relaying rails, 56 to 60 lb.	23.00 to 25.00
*Relaying rails, 65 lb. and heavy.....	26.00 to 31.00

#### Per Net Ton

Rolling Mill Grades:	
Iron angle and splice bars	15.00 to 15.50
Iron arch bars and transoms.....	21.00 to 21.50
Iron car axles.....	26.00 to 26.50
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 2 railroad wrought.....	13.50 to 14.00
No. 1 busheling.....	9.00 to 9.50
No. 2 busheling.....	7.00 to 7.50
Locomotive tires, smooth.....	14.50 to 15.00
Pipes and flues.....	10.00 to 10.50
Cupola Grades:	
No. 1 machinery cast.....	14.50 to 15.00
No. 1 railroad cast.....	13.75 to 14.25
No. 1 agricultural cast.....	13.25 to 13.75
Stove plates.....	12.25 to 12.75
Grate bars.....	11.75 to 12.25
Brake shoes.....	10.50 to 11.00

\*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

## New Blooming Mill at Cleveland

A new 32-in. reversing blooming mill will be added to the equipment of the Corrigan, McKinney Steel Co., Cleveland, to increase its semi-finished steel capacity. This will be used for the rolling of small billets. The contract for the mill, with tables and transfers, has been placed with the Mesta Machine Co., Pittsburgh. The mill will be driven by a 4000-hp. reversing motor, contract for which, together with a 3300-kw. flywheel generator set, has been placed with the General Electric Co.

## Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Soft steel bars.....	3.00c.
Reinforc'g bars, billet steel.....	2.15c. to 2.35c.
Reinforc'g bars, rail steel.....	1.85c. to 1.95c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Bands (3/8 in. in Nos. 10 and 12 gages).....	3.20c.
Hoops (No. 14 gage and lighter).....	3.75c.
Black sheets (No. 24).....	4.05c.
Galv. sheets (No. 24).....	4.90c.
Blue ann'd sheets (No. 10).....	3.35c.
Spikes, 3/8 in. and larger.....	3.55c.
Track bolts.....	4.55c.
Rivets, structural.....	4.00c.
Rivets, boiler.....	4.00c.
Per Cent Off List	
Machine bolts.....	60
Carriage bolts.....	60
Coach or lag screws.....	60
Hot-pressed nuts, sq., tap. or blank.....	60
Hot-pressed nuts, hex., tap. or blank.....	60
No. 8 black ann'd wire, per 100 lb.....	\$3.45
Com. wire nails, base per keg.....	3.20
Cement c'd nails, base per keg.....	3.20

# New York

## Pig Iron Competition Keener—Steel Bookings Continue Ahead of Those a Year Ago

NEW YORK, Aug. 13.—Pig iron demand has improved, notwithstanding the vacation season. Sales in this district during the week totaled about 14,000 tons, and in addition, considerable tonnage was bought here for delivery in other territories. Close to 7000 tons is under active inquiry. Shipments from furnaces are going forward against contracts without interruption, and melt is not only sustained, but is expected to increase. Manufacturers of radiators are running at a better rate, although still short of their operations a year ago, and other makers of heating equipment look for an increase in their production schedules before October. Both Alabama and eastern Pennsylvania producers have become more important factors in this market. Several thousand tons of Southern iron have been sold in this territory in the past fortnight. The new rate of \$5.50 a ton to New York by rail and steamship through Savannah, Ga., has the advantage over the rail and barge rate via Norfolk, Va., of permitting smaller individual shipments, since free lighterage is allowed to any point in New York harbor on lots of 200 tons or over. Quotations at Birmingham range from \$14 for No. 2 plain foundry to \$13 for basic. Prices on eastern Pennsylvania foundry grade for delivery in this district range from \$19 to \$19.50, base, furnace. Buffalo foundry iron is still available at \$17.50, base, furnace, with some orders bringing \$18. The Crompton & Knowles Loom Works, Providence, R. I., and Worcester, Mass., has bought 1000 tons, and the Thatcher Co., Newark, N. J., has closed against its inquiry for 500 tons of foundry. The American Radiator Co. has placed about half of the 16,000 tons to be bought for its Western plants. The New York Air Brake Co. is in the market for 950 tons of foundry and malleable for its Watertown, N. Y., plant.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil.	1.75
to 2.25	\$22.41 to \$22.91
*But. No. 2, del'd east.	
N. J.	20.78 to 21.28
East. Pa. No. 2 fdy., sil.	
1.75 to 2.25	20.39 to 21.52
East. Pa. No. 2X fdy., sil.	
2.25 to 2.75	20.89 to 22.02

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

\*Price delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

**Fluorspar.**—Foreign mines are heavily committed, but importers still have considerable gravel spar to sell and quotations as low as \$18.25 a net ton, duty paid, are current.

**Warehouse Business.**—Buying is fair, but at the present rate August will not exceed July business totals and may be a smaller month. Struc-

tural steel business is limited to small lots and sheets are only moderately active. Prices are being maintained except for concessions of \$1 to \$2 a ton on black, galvanized and blue annealed sheets.

**Cast Iron Pipe.**—Current business in pressure pipe is limited to small lots purchased by private companies. The Middlesex Water Co., Perth Amboy, N. J., has awarded six miles of 20-in. water pipe to the Warren Foundry & Pipe Co. and the Public Works Engineering Corporation, New York, has closed on about 250 tons of 16-in., Class B water pipe for Champaign, Ill., with the National Cast Iron Pipe Co. Prices continue irregular, ranging from \$31 to \$33 a ton, f.o.b. northern foundry.

Prices per net ton delivered New York: Water pipe, 6-in. and larger, \$33.60 to \$34.60; 4-in. and 5-in., \$36.60 to \$37.60; 3-in., \$43.60 to \$44.60. Class A and gas pipe, \$3 extra.

**Finished Steel.**—There has been some slowing down in buying, largely on account of the vacation season. However, bookings are considerably ahead of those in the corresponding period of 1928. Mills are running at capacity to relieve the pressure for shipments. Structural shapes are firm and unchanged at 2.29½c. delivered New York, on small lots and at 2.24½c. on the general run of business. The minimum for the largest orders is 2.19½c. Plates range from 2.22½c. to 2.32½c. Much interest continues to center in structural steel, the activities of which are being maintained at a high level. Lettings in the New York metropolitan district during July were 57,775 tons, as against 46,899 tons in June and 70,000 tons in July of last year, according to the Structural Steel Board of Trade. These figures do not include bridges, subway work and the like. The largest structural award of the week was 14,500 tons for two Pennsylvania Railroad bridges across the Hackensack River in New Jersey. Ten thousand tons for the passenger bridge went to the American Bridge Co. and 4500 tons for the freight bridge to the Phoenix Bridge Co. The McClintic-Marshall Co. will supply 9400 tons for route 106, section 6, of the New York subway. Fresh inquiries include 6000 tons for a building for the Farmers Loan & Trust Co., the general contract for which has been let to the George A. Fuller Co. No action has been taken on 20,600 tons for two subway sections in New York. Demand for sheet steel has subsided somewhat, thus allowing mills to catch up with back orders. The price situation has not altered, with galvanized selling at 3.50c., Pittsburgh, to both jobbers and consumers. The wire goods market is still weak and wire nails are quoted at from \$2.50 to \$2.55 a keg, Pitts-

burgh. Plain wire can be bought at \$2.40 a 100 lb., Pittsburgh.

Mill prices per lb., delivered New York: Soft steel bars, 2.29c.; plates, 2.22½c.; structural shapes, 2.19½c.; bar iron, 2.14c.

**Reinforcing Bars.**—Igoe Brothers will furnish 600 tons of bars for a building for the Packard Motor Car

### Warehouse Prices, f.o.b. New York

Base per Lb.	
Plates and structural shapes.....	3.30c.
Soft steel bars, small shapes.....	3.25c.
Iron bars.....	3.24c.
Iron bars, Swed. charcoal.....	7.00c. to 7.25c.
Cold-fin. shafting and screw stock—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Cold-roll strip, soft and quarter hard.....	
1½ x 6 in. and smaller.....	5.15c. to 5.40c.
Hoops.....	4.25c.
Bands.....	3.75c.
Blue ann'd sheets (No. 10).....	3.85c. to 3.90c.
Long terme sheets (No. 24).....	5.80c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galv. annealed.....	5.15c.
Tire steel, 1½ x ½ in. and larger.....	3.30c.
Smooth finish, 1 to 2½ x ½ in. and larger.....	3.65c.
Open-hearth spring steel, bases.....	
	4.50c. to 7.00c.
Per Cent	
Machine bolts, cut thread: Off List	
¾ x 6 in. and smaller.....	.60
1 x 30 in. and smaller.....	.50 to .50 and 10
Carriage bolts, cut thread:	
½ x 6 in. and smaller.....	.60
¾ x 20 in. and smaller.....	.50 to .50 and 10
Coach screws:	
½ x 6 in. and smaller.....	.60
1 x 6 in. and smaller.....	.50 to .50 and 10
Boiler Tubes—Per 100 Ft.	
Lap welded, 2-in.....	\$17.33
Seamless steel, 2-in.....	20.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

### Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-3-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	5	+19
¾-in. butt.....	11	+ 9
1-1½-in. butt.....	14	+ 6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+ 6
7-12-in. lap.....	3	+16

### Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per Box—A AAA		
1C.....	\$9.70	\$12.10
1X.....	12.00	14.25
1XX.....	13.90	16.00

### Terne Plate (14 x 20 in.)

1C—20-lb. coating.....	\$10.00 to \$11.00
1C—30-lb. coating.....	12.00 to 13.00
1C—40-lb. coating.....	13.75 to 14.25

### Sheets, Box Annealed—Black, C. R.

One Pass	Per Lb.
Nos. 18 to 20.....	3.80c.
No. 22.....	3.95c.
No. 24.....	4.00c.
No. 26.....	4.10c.
No. 28*	4.25c.
No. 30.....	4.50c.

### Sheets, Galvanized

	Per Lb.
No. 14.....	4.40c.
No. 16.....	4.25c.
No. 18.....	4.40c.
No. 20.....	4.50c.
No. 22.....	4.60c.
No. 24.....	4.75c.
No. 26.....	5.00c.
No. 28*	5.25c.
No. 30.....	5.65c.

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Co. at Newark, N. J. For route 106, section 6, of the New York subway, 270 tons has been awarded to the McClintic-Marshall Co., while Carroll-McCreary Co., Inc., will supply 300 tons for a building at 40 Wall Street, New York. Action is expected shortly on 500 tons for an extension of the boardwalk at Rockaway Beach, N. Y. Prices are steady and unchanged.

Billet steel reinforcing bars in 40, 50 and 60-ft. lengths, 2.05c. per lb., Pittsburgh, and 2.30c. per lb., Pittsburgh warehouse, for cut lengths. Out of New York warehouse, 2.90c. per lb. for lots of 5 tons or more, 3.05c. for lots of 2 to 5 tons and 3.30c. for less than 2 tons, all delivered at job.

**Coke.**—Buying is light and prices are unchanged at \$2.75 per net ton, Connellsville, for standard furnace coke, and \$4.85 per net ton, ovens, for special grades of beehive foundry coke. Delivered prices of foundry coke are \$8.56 per net ton, delivered to northern New Jersey, Jersey City and Newark, and \$9.44 to New York or Brooklyn. By-product coke is quoted at \$9 to \$9.40 a net ton, Newark or Jersey City, and \$10.06, New York or Brooklyn.

**Old Material.**—Except for active buying of No. 1 and No. 2 heavy melting steel by brokers filling contracts the market is rather inactive. No. 1 heavy melting steel is quoted at \$16

per ton, delivered Bethlehem, Pa.; \$16.25, delivered Claymont, Del., and \$16.50 delivered Coatesville, Pa. No. 2 steel is being bought at \$11.75 to \$12 a ton, delivered Pottsville, Pa., \$13.50 a ton, delivered Harrisburg, Pa., and \$14 to \$14.25 a ton, delivered Conshohocken, Pa. Cast scrap continues quiet with brokers offering about \$14.50 a ton, delivered to Florence, N. J., or to Harrisburg, Pa.

**Dealers' buying prices per gross ton, f.o.b. New York:**

No. 1 heavy melting steel	\$12.75 to \$13.35
Heavy melting steel (yard)	8.00 to 9.75
No. 1 hvy. breakable cast	10.75 to 11.75
Stove plate (steel works)	8.00 to 8.25
Locomotive grate bars	8.25 to 8.75
Machine shop turnings	7.75 to 8.00
Short shoveling turnings	7.75 to 8.00
Cast borings (blast furn. or steel works)	7.00 to 7.75
Mixed borings and turnings	6.75 to 7.75
Steel car axles	19.50 to 20.00
Iron car axles	24.00 to 25.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)	10.75
Forge fire	9.75 to 10.25
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought, long	11.00 to 11.50
Rails for rolling	13.25 to 13.75
Cast iron car wheels	12.50 to 13.00
Stove plate (foundry)	8.00 to 8.50
Malleable cast (railroad)	14.00 to 14.50
Cast borings (chemical)	10.00 to 10.50

**Prices per gross ton, deliv'd local foundries:**

No. 1 machry. cast	\$17.00
No. 1 hvy. cast (columns, bldg. materials, etc.), cupola size	15.00
No. 2 cast (radiators, cast boilers, etc.)	14.50

prices are firm and unchanged. Cleveland furnaces quote foundry and malleable iron at \$18.50 furnace for outside shipment, and \$19 for local delivery. In Michigan both grades are quoted at \$20 furnace.

**Prices per gross ton at Cleveland:**

N'th'n fdy., sil. 1.75 to 2.25	\$19.50
S'th'n fdy., 1.75 to 2.25	\$20.00 to 20.50
Malleable	19.50
Ohio silvery, 8 per cent	28.00
Basic Valley furnace	18.50
Stand. low phos., Valley	26.50 to 27.00

Prices except on basic and low phosphorus are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

**Iron Ore.**—One 5000-ton lot of Lake Superior ore was sold in the week and a moderate amount of small lot business is in prospect from furnaces that because of continued good operations, will need additional ore to carry them through the winter. As most of the ore is going directly to the furnaces, the amount on docks has increased but slightly since the opening of navigation. The dock balance on Aug. 1 was 4,452,100 tons, as compared with 5,385,007 tons on the same date a year ago, according to the monthly report of the Lake Superior Iron Ore Association. Receipts at Lake Erie docks during July were 7,509,408 tons, and for the season until Aug. 1, 22,438,384 tons, as compared with 15,124,977 tons for the same period last year. Shipments from Lake Erie docks during July were 5,385,652 tons, and for the season until Aug. 1 were 17,182,569 tons, as against 11,410,116 tons up to Aug. 1, last year. Receipts until Aug. 1 at other parts, including South Chicago, Gary, and Indiana Harbor, were 8,845,556 tons, as compared with 6,791,432 tons up to Aug. 1, last year.

**Semi-finished Steel.**—Specifications for sheet bars, billets and slabs are holding up to recent volume, being sufficient to keep the leading local producer operating at 100 per cent of capacity, with full commitment for two weeks. As consumers are covered with contracts, there is no new inquiry.

**Strip Steel.**—Specifications for both hot and cold-rolled strip during the past week gained with some of the mills, coming from automobile companies that are bringing out new models. Some mills need tonnage in wide hot-rolled strip but are comfortably filled with orders for narrow material, while others are caught up with deliveries on narrow strip but are well supplied with orders for wide material. Cold-rolled strip can still be bought at 2.75c., Cleveland or Pittsburgh, although several mills are now asking 2.85c. As nearly all consumers are covered with contracts, the higher price cannot apply to much business before the fourth quarter.

**Bolts, Nuts and Rivets.**—Specifications for bolts and nuts are fair, being about the same since Aug. 1 as during the corresponding period of July. Business in the fore part of July showed quite a gain over the same period in June. Prices are firm. There is the usual seasonal decline in the demand for large rivets. Some

## Cleveland

### Steel Demand Keeps Up in Surprising Volume—Pig Iron Sales Total 15,000 Tons

CLEVELAND, Aug. 13.—While some slowing down is reported among consuming industries, steel business is holding up well for August, the volume being about the same as during July. Specifications received by a few of the mills increased somewhat during the week owing to the release of orders by some of the automobile manufacturers for steel bars, auto body sheets and hot and cold-rolled strip steel. Most automobile companies outside of the Ford Motor Co. are now operating at considerably reduced schedules, but some are planning to increase production shortly on new models. Stocks of old cars are reported to be rather large and until these are materially reduced some of the motor car manufacturers will probably go rather slowly in making new models. Automobile rim and tire manufacturers, which have continued heavy operations, are now slowing down. Some of the automobile companies have sent inquiries to stamping plants for parts for the fourth quarter.

Deliveries on steel bars, plates and shapes show little change but are improving on sheets and on strip steel. Some of the continuous strip mills need tonnage and the same is true of some of the mills making cold-rolled strip and auto body sheets.

Outside of some weakness in wire, there is little change in the price situation.

**Pig Iron.**—The market was quieter the past week than during the previous few weeks. Sales by Cleveland interests in foundry and malleable iron amounted to 15,000 tons. The business included many small lots for early shipment. While some foundries are buying to cover for the remainder of the year, few that already have enough iron under contract to carry them through the third quarter are as yet showing any interest in the fourth quarter. There has been quite a slow-

ing down in shipments this month to consumers in most fields, including the automotive industry. With some furnaces the decrease has been 15 to 20 per cent, as compared with the same period in July. Steel making grades are inactive. Lake furnace

**Warehouse Prices, f.o.b. Cleveland**

	Base per Lb.
Plates and struc. shapes	3.00c.
Soft steel bars	3.00c.
Reinforc. steel bars	2.25c. to 2.50c.
Cold-fin. rounds and hex.	3.65c.
Cold-fin. flats and sq.	4.15c.
Hoops and bands, No. 12 to 14 in. inclusive	3.25c.
Hoops and bands, No. 13 and lighter	3.65c.
Cold-finished strip	5.95c.
Black sheets (No. 24)	3.70c. to 3.90c.
Galvanized sheets (No. 24)	4.60c. to 4.75c.
Blue ann'd sheets (No. 10)	3.25c.
No. 9 ann'd wire, per 100 lb.	\$2.90
No. 9 gal. wire, per 100 lb.	3.35
Com. wire nails, base per keg	2.90

\*Net base, including boxing and cutting to length.



effort is being made, but apparently without success, to secure concessions from the regular \$3.10 per 100 lb. price for large rivets.

**Steel Bars, Plates and Shapes.**—Specifications for steel bars received by the leading local producer increased from the automobile and agricultural implement industries the past week and other mills report a fair volume of business. Deliveries can be had in two or three weeks. Structural shapes continue to move fairly well. With considerable building work pending, conditions are brighter in that field. The Maumee River bridge, Toledo, for which bids have been taken, will require 7000 tons and a bank and office building in Akron, 5000 tons. The inquiry is out for the jail courts building, Cleveland, which will take 2000 tons. The demand for plates continues active. Orders include 700 tons taken by a Cleveland mill for locomotive works. Prices are firm at 1.90c. to 1.95c., Cleveland, for steel bars and 1.95c., Pittsburgh, for plates and shapes.

**Sheets.**—Specifications for good sized lots of automobile sheets were placed during the week by some of the Michigan automobile companies that are bringing out new models. However, business generally is light and mills continue to reduce their backlogs. Some mills are committed for several weeks on auto body sheets and others are in need of tonnage. Mills have enough black sheet business to maintain good operations for four weeks, but some need orders for blue annealed sheets. Enameling stock continues in good demand. Prices appear well stabilized at recent quotations. Black sheets are firm at 2.85c., Pittsburgh, and galvanized sheets range from 3.50c. to 3.60c. Less is heard than recently of shading from the 2.35c. price on blue annealed.

**Warehouse Business.**—The volume of business is holding up well for this season. One jobber reports a gain over July and another a slight falling off. Prices are firm.

**Wire Products.**—Prices on wire have

become irregular. Plain wire is being quoted to jobbers at 2.40c., Cleveland, and the same price is being named on manufacturing wire for delivery in the Ohio territory outside of Cleveland. The weakness in nails continues. While definite prices seem to have about disappeared, \$2.50 per keg seems to represent the market.

**Coke.**—By-product coke for domestic use is moving in good volume at \$4.50 per net ton, Ohio ovens, for egg size. Foundry coke is quiet. Ohio by-product foundry coke is unchanged at \$8.25 Painesville, for August shipment. Prices on premium brands of Connellsville foundry coke are unchanged.

**Old Material.**—A Cleveland consumer purchased a moderate tonnage of selected heavy melting steel scrap in the week at around \$17 and dealers are offering \$16.75 for this grade, indicating a slightly firmer market. Unselected material is unchanged at \$15.50 to \$16. Machine shop turnings are firmer and cast scrap is higher. Short shoveling turnings have brought \$11.75 for small lots. In the Valley district prices are easier on steel making scrap. Dealers who recently paid up to \$18.50 for No. 1 heavy melting

steel for Youngstown delivery are now offering only \$18 for that grade and \$17.50 for compressed sheet steel scrap, as compared with a recent price of \$18 or higher. Blast furnace scrap is unchanged.

Prices per gross ton delivered consumers yards:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel.	\$15.00 to \$15.50
No. 2 heavy melting steel.	14.50 to 15.00
Compressed sheet steel.	15.00 to 15.25
Light bundled sheet stampings.	12.00 to 12.50
Drop forge flashings.	13.00 to 13.25
Machine shop turnings.	9.75 to 10.25
Short shoveling turnings.	11.50 to 11.75
No. 1 railroad wrought.	12.50 to 14.00
No. 2 railroad wrought.	16.00 to 16.50
No. 1 busheling.	13.25 to 13.75
Pipes and flues.	9.00 to 9.50
Steel axle turnings.	12.50 to 13.00

Acid Open-Hearth Grades:	
Low phos., forging crops.	17.75 to 18.00
Low phos., billet, bloom and slab crops.	18.50 to 18.75
Low phos., sheet bar crops.	18.00 to 18.50
Low phos., plate scrap.	18.00 to 18.50

Blast Furnace Grades:	
Cast iron borings.	10.50 to 10.75
Mixed borings and short turnings.	10.50 to 10.75
No. 2 busheling.	10.50 to 10.75

Cupola Grades:	
No. 1 cast.	17.50 to 18.00
Railroad grate bars.	11.00 to 12.00
Stove plate.	12.00 to 12.50
Rails under 3 ft.	18.50 to 19.00

Miscellaneous	
Railroad malleable.	18.00 to 18.50
Rails for rolling.	16.25 to 16.50

## Philadelphia

### Plate and Shape Orders Good, But Bars and Sheets Are Quiet—Pig Iron Unchanged

PHILADELPHIA, Aug. 13.—Specifications on plate contracts continue in fair volume and shape mills are booking about the same tonnage as last month, but deliveries are no longer extended. Steel bars and black and galvanized sheets are quiet, but mills are maintaining a high rate of operation despite a considerable reduction in the unfilled tonnages on their books. Pig iron is quiet, but prices are maintained with only occasional concessions by eastern Pennsylvania furnaces, despite continued competition from Birmingham iron. Heavy melting steel prices are strong, but other grades are inactive.

**Pig Iron.**—Eastern Pennsylvania furnaces are making an effort to maintain foundry iron at a minimum of \$21 a ton and concessions to \$20.50 a ton are becoming less common, although Birmingham foundry iron is offered at \$14 a ton, furnace, with a rail and water freight rate via Savannah, Ga., of \$5.25 a ton, loaded on cars Philadelphia. Most foundry consumers have sufficient iron in stock or due on contracts to maintain their present schedules of production and have not yet begun to inquire for the last quarter. Basic iron is quiet since the purchase of about 18,000 tons by a Coatesville, Pa., consumer, but Birmingham furnaces are still actively seeking basic business in eastern Pennsylvania. The New York Air Brake Co., Watertown, N. Y., is inquiring for 950 tons of malleable and

the General Electric Co., Schenectady, N. Y., is in the market for 500 tons of foundry iron.

Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$21.26 to \$21.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.26
East. Pa. No. 1X.	22.26 to 22.76
Basic (del'd east. Pa.)	19.75 to 20.25
Gray forge	20.00 to 20.50
Malleable	21.25 to 21.75
Stand. low phos. (f.o.b. N. Y. State furnace)	22.00 to 23.00
Cop. br'g low phos. (f.o.b. furnace)	23.50 to 24.00
Va. No. 2 plain, 1.75 to 2.25 sil.	24.04
Va. No. 2X, 2.25 to 2.75 sil.	24.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

**Bars.**—The lull in the automobile industry is curtailing the tonnage of bars moving to consumers, but mills still have a fair backlog of business and the price is firm at 1.95c., Pittsburgh, or 2.27c., delivered Philadelphia.

**Reinforcing Bars.**—A substantial tonnage is required for current small reinforced concrete projects, but not much new business has appeared recently. Billet steel bars are still quoted at 1.95c. to 2.05c. per lb., Pittsburgh, or 2.27c. to 2.37c., delivered Philadelphia, with the \$5 extra for cutting to length sometimes disregarded by the distributor. Rail steel bars are quoted at 1.95c., Franklin, Pa., or Tonawanda, N. Y., or 2.27c., delivered Philadelphia, with no extra for cutting to length.

#### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, $\frac{1}{2}$ -in. and heavier.	2.70c.
Plates, $\frac{3}{8}$ -in.	2.90c.
Structural shapes	2.70c.
Soft steel bars, small shapes, iron bars (except bands).	2.80c.
Round-edge iron.	3.50c.
Round-edge steel, iron finished $1\frac{1}{2}$ x $1\frac{1}{2}$ in.	3.50c.
Round-edge steel, planished.	4.30c.
Reinforce. steel bars, sq. twisted and deform.	2.60c. to 2.80c.
Cold-fin. steel, rounds and hex.	3.60c.
Cold-fin. steel, sq. and flats.	4.10c.
Steel hoops	3.55c.
Steel bands, No. 12 to $\frac{3}{8}$ -in. inclus.	3.30c.
Spring steel	5.00c.
*Black sheets (No. 24)	4.10c.
†Galvanized sheets (No. 24)	4.85c.
Light plates, blue annealed (No. 10)	3.25c.
Blue ann'd sheets (No. 13)	3.40c.
Diam. pat. floor plates—	
$\frac{1}{2}$ -in.	5.30c.
$\frac{3}{8}$ -in.	5.50c.
Rails	3.20c.
Swedish iron bars.	6.60c.

\*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.  
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

**Shapes.**—Although building projects have declined considerably, the tonnage of structural steel in demand continues heavy, with an unusually large volume of bridge building requirements. Two bridges for the Pennsylvania Railroad over the Hackensack River totaling 14,500 tons and about 500 tons in other small bridges for the same railroad have been awarded to eastern Pennsylvania fabricating shops. Shape prices are unchanged at 1.95c. to 2.05c., f.o.b. nearest mill to consumer, or 2.01c. to 2.11c., delivered Philadelphia.

**Plates.**—Mills are maintaining a good rate of operation and in some instances specifications against contracts are coming in so well that mills expect August business to be slightly larger than July, unless buying declines toward the end of the month. The price is firm at 2.05c. per lb., Coatesville, or 2.15c., delivered Philadelphia.

**Sheets.**—Consumers are generally covered for immediate requirements and contract specifications are light. Blue annealed sheet demand continues moderately active and prices are unchanged at 2.35c., Pittsburgh, or 2.67c., delivered Philadelphia for No. 13 gage. Light plates, blue annealed, No. 10 gage, are 2.20c. Pittsburgh, or 2.52c., delivered Philadelphia. Black sheets are quiet and the price unchanged at 2.85c., Pittsburgh, or 3.17c., delivered Philadelphia. Galvanized sheets are quoted at 3.60c., Pittsburgh, or 3.92c., delivered Philadelphia, with occasional concessions of \$1 a ton on desirable business. The Pennsylvania Railroad opens bids tomorrow on 400 tons of blue annealed, 300 tons of black and 100 tons of galvanized sheets.

**Imports.**—In the week ended Aug. 10, a total of 1747 tons of pig iron arrived at this port, of which 1000 tons was from the United Kingdom and 747 tons from British India. Ore imports consisted of 6000 tons of

manganese ore from Brazil and 122 tons of chrome ore from Portuguese Africa. Steel imports were 129 tons of structural shapes from Belgium and 26 tons from France, 50 tons of steel bars from Germany and 14 tons of steel bands and 350 tons of skelp iron from France. A total of 47 tons of steel scrap was received from the United Kingdom.

**Old Material.**—Most grades of cast scrap show a slight undertone of weakness, except for an advance of 25c. a ton in cast borings on the basis of a sale to an eastern Pennsylvania merchant furnace at \$11.75 a ton. Heavy melting steel prices are firm and a Phoenixville, Pa., mill, which normally buys No. 2 heavy melting steel, closed last week on a small tonnage of No. 1 heavy melting steel at \$17 a ton, delivered. This is the third eastern Pennsylvania consumer of No. 2 steel, which has bought a small tonnage of No. 1 grade in the past few months.

*Prices per gross ton delivered consumers' yards, Philadelphia district:*

No. 1 heavy melting steel	\$16.50 to \$17.00
Scrap T rails	16.00 to 16.50
No. 2 heavy melting steel	12.50 to 14.50
No. 1 railroad wrought	16.00 to 16.50
Bundled sheets (for steel works)	11.50
Hydraulic compressed, new	14.50 to 15.50
Hydraulic compressed, old	12.00 to 12.50
Machine shop turnings (for steel works)	11.50 to 12.00
Heavy axle turnings (or equiv.)	14.00 to 14.50
Cast borings (for steel works and roll. mill)	11.00 to 11.75
Heavy breakable cast (for steel works)	15.00
Railroad grate bars	12.00 to 12.50
Stove plate (for steel works)	12.00 to 12.50
No. 1 low phos. hvy. 0.04% and under	22.00 to 23.00
Couplers and knuckles	19.50 to 20.50
Rolled steel wheels	19.50 to 20.50
No. 1 blast fnace scrap	10.50 to 11.00
Wrot. iron and soft steel pipes and tubes (new specific.)	15.00
Shafting	19.00 to 19.50
Steel axles	23.00 to 23.50
No. 1 forge fire	14.00
Cast iron carwheels	16.50 to 16.75
No. 1 cast	16.50 to 17.00
Cast borings (for chem. plant)	14.50
Steel rails for rolling	16.50 to 17.00

ucts Corporation was incorporated in New York in 1924, and two years later completed construction of a blast furnace and 55 by-product coke ovens at Troy. The corporation supplies gas under 20-yr. contracts to public utility companies furnishing all of the gas used in Albany, Schenectady, Troy and other small communities in the Albany district. The corporation has outstanding \$5,000,000 of 8 per cent preferred stock and has 157,908 no par common shares outstanding of an authorized issue of 200,000 shares. It is estimated that about \$7,000,000 is invested in property and plant equipment.

It is understood that the operating personnel of the Hudson Valley corporation will remain unchanged. Whether the blast furnace, which has been idle since October, 1927, will resume operations soon has not yet been determined.

## Steel Corporation's July Orders Decrease

There was a decrease of 168,733 tons in the unfilled orders of the United States Steel Corporation at the end of July. This is the third successive month in which decreases have been registered. In June the decline was 47,257 tons, and in May, 123,596 tons. For five months previous to May increases were the rule. A year ago there was a decrease for July of 66,082 tons. The table gives the data for the last 19 months:

	1929	1928
Jan. 31	4,109,487	4,275,947
Feb. 28	4,144,341	4,398,189
Mar. 31	4,410,718	4,335,206
Apr. 30	4,427,763	3,872,133
May 31	4,304,167	3,416,822
June 30	4,256,910	3,637,009
July 31	4,088,177	3,570,927
Aug. 31		3,624,043
Sept. 30		3,698,368
Oct. 31		3,751,030
Nov. 30		3,673,000
Dec. 31		3,976,712

## Pittsburgh and Riverside Forging Merger

The Pittsburgh Forging Co., Pittsburgh, with plant at Coraopolis, Pa., maker of automobile and railroad forgings, will be merged with the Riverside Forge & Machine Co., Jackson, Mich., maker of automobile forgings, subject to the approval of stockholders of both companies. Edwin Hodge, Jr., president of the Pittsburgh company, is also president of the Riverside company, having succeeded George Wilkins, who remains as treasurer and a director of the Riverside Company.

## General Bronze Co. Expands

The General Bronze Co., Pittsburgh, manufacturer of copper, bronze and brass castings, has completed installation of new machinery, including a boring mill, drill press, lathe, milling machines and grinding machine. Contract has been placed for a centrifugal molding machine. In addition, the melting capacity of the plant is being doubled by the installation of new furnaces.

## Acquires Company Making Electric-Weld Tubes

The Fretz-Moon Co., Butler, Pa., maker of electrically welded steel tubing in small sizes, has been acquired by interests identified with the Republic Iron & Steel Co., Youngstown, and Spang, Chalfant & Co., Inc., Pittsburgh. Changes in management will be made, but the company will continue to be operated as an independent unit.

## Negotiating for Georgian Manganese Ore

A report from Moscow via London is that the United States Steel Corporation is negotiating to buy 80,000 to 150,000 tons of manganese ore annually for the next five years from the Georgian Manganese Trust, a semi-official Soviet organization which has controlled the property since W. A. Harriman & Co. gave up their lease. Confirmation or denial

of the report could not be obtained prior to going to press.

## Hudson Valley Furnace and Coke Plant Sold

Directors of Hudson Valley Coke & Products Corporation, Troy, N. Y., have recommended to stockholders the sale of the company's properties and assets to the Niagara Hudson Power Corporation, the transaction to be ratified at a special stockholders' meeting on Sept. 10. Under the terms of the sale the new owner will assume the mortgage and other indebtedness of the corporation and will pay in cash \$39 for each share of Hudson Valley preferred stock outstanding and \$1 for each share of common, or a total of \$2,117,908 in excess of the corporation's indebtedness. Preferred stockholders are given the option of taking a cash settlement or 1½ shares of Niagara Hudson common stock.

The Hudson Valley Coke & Prod-

## Pacific Coast

### Steel Business Quiet—Bids Opened on 2000 Tons of Plates for Penstock at Tacoma

SAN FRANCISCO, Aug. 10 (*By Air Mail*).—Business in iron and steel products on the Pacific Coast this week was by no means active. Reinforcing bars moved better than any other product and, while the aggregate tonnage was not especially heavy, numerous projects were placed. Plate fabricators are interested in the outcome of the opening of bids this week on 2000 tons for a penstock at Tacoma, Wash., and on 200 tons for a pipe line at Bremerton, Wash. Prices, generally, are holding well to the levels established some time ago.

**Pig Iron.**—Pig iron buying continues to be confined to tonnages for immediate needs, and no large sales or inquiries were reported. Quotations are unchanged.

*Prices per gross ton at San Francisco:*  
 \*Utah basic.....\$25.00 to \$26.00  
 \*Utah fdy., sil. 2.75 to 3.25.....25.00 to 26.00  
 \*\*Indian fdy., sil. 2.75 to 3.25.....25.00 to 26.00

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Bars.**—Outstanding among reinforcing steel bar awards this week were 600 tons for the Shell Oil Building, San Francisco, and 400 tons for a warehouse for the American Can Co., San Francisco, both placed with the Soule Steel Co. The W. S. Wetenhall Co., booked 175 tons for an abattoir in the same city. Included among the new inquiries are 630 tons for a printing plant in San Francisco and 150 tons for a theater in Stockton, Cal. In the San Francisco district 2.20c. a lb., base, continues to apply on out-of-stock lots by the carload, while 2.60c., base, applies on smaller quantities. In Los Angeles, 2.30c. a lb., base, is being quoted on carload quantities and 2.70c., base, on smaller tonnages. Demand for merchant bar material is confined to small lots composed of many sizes. Mill prices on this class of steel continue firm at 2.35c., c.i.f., Coast ports.

**Plates.**—Bookings this week were confined to lots of less than 100 tons, and no new inquiries of importance appeared. Bids were opened on 2000 tons for a penstock and surge tank at Tacoma, Wash., and on 200 tons for a riveted steel pipe line at Bremerton, Wash. Prices appear to be firm at 2.35c., c.i.f., Coast ports.

**Shapes.**—Only three projects calling for over 100 tons of structural shapes were placed during the week. The largest award was 257 tons for reclamation work at Boise, Idaho. Bids open Aug. 19 on 8000 tons for the St. John's bridge at Portland, Ore. Bids were opened this week on 700 tons of sheet piling for the Alki Street sea wall, Seattle. While a number of new projects are contemplated, new inquiries all called for

lots of less than 100 tons each. Plain material is firm at 2.35c. a lb., c.i.f., Coast ports.

**Cast Iron Pipe.**—Demand is light, as is usual at this time of the year, and only one award in excess of 100 tons was reported. The Griffith Co. secured 217 tons of 6 to 12-in. Class B pipe for the improvement of Atlantic Street, Long Beach, Cal. Bids were opened this week on 875 tons

of 10 to 24-in. Class B pipe for Bremerton, Wash. Anaheim, Cal., will open bids Aug. 22 for 377 tons of 6 to 10-in. Class B pipe. On Aug. 12, San Diego, Cal., will open bids for 144 tons of 4 and 6-in. Class B pipe for the improvement of Plata Avenue and on 201 tons of 4 and 6-in. Class C pipe for the improvement of El Prado Avenue. Bids will be opened Aug. 26 for 112 tons of 4 to 8-in. Class B Pipe for the improvement of Estrella Street, San Diego.

**Coke.**—Movement of coke reflects the quiet condition noted in the pig iron market, and both sales and inquiries this week involved small lots for immediate shipment.

## Birmingham

### Pig Iron Inquiries Received From Italy—Shipments From Furnaces Improve—Cast Pipe Backlogs Shrink

BIRMINGHAM, Aug. 13.—Furnace interests report a good volume of pig iron shipments, following gradual improvement since the first of August. More iron is moving to district foundries, as well as to outside territories, and stock will be reduced if the present rate of deliveries continues. District requirements for the third quarter are about covered. More iron is under contract now than there was at this stage in either of the two preceding quarters. Furnace interests are continuing to press for business in competitive territories, although only few orders of any consequence have been booked so far. Additional trial orders in small lots, however, are being received from time to time. Two or three inquiries have been received for iron to be shipped to Italy, but there have been no active negotiations for sales to that country. Prices for No. 2 foundry remain at \$14.50 Birmingham, for the district, while in competitive territories concessions of 50c. a ton are frequently reported. Nine furnaces are on foundry, seven on basic and one on recarburizing iron.

*Prices per gross ton, f.o.b. Birmingham dist. furnaces:*

No. 2 fdy., 1.75 to 2.25 sil.....\$14.50  
 No. 1 fdy., 2.25 to 2.75 sil.....15.00  
 Basic.....14.50

**Finished Steel.**—Bookings in roofing sheets are declining. New business in bars, plates, shapes and railroad accessories continues at a rate unequalled for the season in this district. Though inquiries are not so heavy as they were 30 days ago, they indicate that August tonnage will be far above the average. Production of these products continues at close to 90 per cent of capacity. Barring an increase in bookings, rail mill operations will be suspended for a few weeks this fall. The usual summer lull is being felt in wire products, though it is not so marked as in preceding years. Prices are fairly steady except on galvanized sheets. New business in structural

steel is slow to develop. Pending tonnage includes a few important projects to be placed within the next four weeks. The total number of active open-hearth furnaces remains at 19.

**Cast Iron Pipe.**—Pressure pipe manufacturers have reduced backlogs during the past two or three weeks because of a decline in new business. Operations since late July, however, have been at the highest rate of the year. Inquiries are becoming more spotty, and very little prospective tonnage developed during the week. Pending tonnage for August includes 6000 ft. of 8-in. pipe for Newton, N. C., to be let Aug. 13; 3000 ft. of 12 to 18-in. pipe for Gadsden, Ala., to be let Aug. 15, and 4 miles of 8 to 12-in. pipe for Hollywood, Fla., to be awarded Aug. 15. The base price continues at \$37 to \$38 a net ton, Birmingham, for 6-in. and larger pipe.

**Old Material.**—The improvement in demand for steel grades that began developing about two weeks ago is the only favorable feature in the dull market. Shipments of steel grades are reported slightly better than in July. Prices are unchanged.

**Coke.**—The movement of foundry coke continues favorable, and little surplus coke is accumulating. Foundry coke remains at \$5 a net ton, Birmingham.

*Prices per gross ton, deliv'd Birmingham dist. consumers' yards:*

Heavy melting steel.....	\$12.50
Scrap steel rails.....	12.50
Short shoveling turnings.....	9.00
Cast iron borings.....	9.00
Stove plate.....	\$11.50 to 12.00
Steel axles.....	21.00
Iron axles.....	23.00
No. 1 railroad wrought.....	10.00 to 10.50
Rails for rolling.....	14.00 to 15.00
No. 1 cast.....	13.50
Tramcar wheels.....	13.00
Cast iron carwheels.....	12.50 to 13.00
Cast iron borings, chem.....	13.50 to 14.00

Wagner Electric Corporation, St. Louis, has moved its Cleveland service station and branch sales office to a new building at 3756 Carnegie Avenue.



## Boston

### Southern Iron Selling at Low Delivered Prices—Billet Steel Reinforcing Bars Weaker

BOSTON, Aug. 13.—Because of the new rail and water rates from Birmingham and other Southern points to the New England seaboard, Southern iron is selling at unusually low delivered prices. A Cape Cod district melter has bought No. 1X at \$22.35 a ton, delivered; two central Massachusetts foundries have purchased No. 2X at \$21.75 and another has closed at \$21.15, delivered. A number of other orders are reported within the range of \$21.15 and \$21.75, delivered, for No. 2X. Such sales were made on a rail and water rate from Birmingham to New England seaboard of \$5.75 a ton, as against the old rail and water rate of \$6.91, and the all-rail rate of \$9.61. The prices at furnace were \$14.50 a ton, base, and less. The amount of iron sold is small, however, and because the supply at prevailing prices is reported limited, Buffalo and other Northern furnaces have not attempted to meet the Southern iron market, quoting \$18 a ton, base, Buffalo, or its equivalent. One Buffalo stack, heretofore credited with making low prices, has practically withdrawn from the market for the remainder of 1929. A Worcester, Mass., textile machinery manufacturer has still to cover on 1000 tons of No. 2X and No. 1X. No other sizable inquiries are in the market.

Foundry iron prices per gross ton deliv'd to most New England points:

†Buffalo, sil. 1.75 to 2.25	\$22.28 to \$22.78
†Buffalo, sil. 2.25 to 2.75	22.78 to 23.28
*Buffalo, sil. 1.75 to 2.25	22.91 to 23.41
*Buffalo, sil. 2.25 to 2.75	22.91 to 23.91
East Penn., sil. 1.75 to 2.25	22.65 to 23.15
East Penn., sil. 2.25 to 2.75	23.15 to 23.65
Va., sil. 1.75 to 2.25	25.21
Va., sil. 2.25 to 2.75	25.71
*Ala., sil. 1.75 to 2.25	23.61
*Ala., sil. 2.25 to 2.75	24.11
†Ala., sil. 1.75 to 2.25	20.25
†Ala., sil. 2.25 to 2.75	20.75

Freight rates: \$4.91 all rail from Buffalo, and \$4.28 rail and water; \$3.65 all rail from eastern Pennsylvania; \$5.21 all rail from Virginia; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

\*All rail rate.

†Rail and water rate.

**Imports.**—Imports of pig iron at Boston in July totaled 950 tons, all from India. Receipts of ore consisted of 10,560 tons of Newfoundland and 12,700 tons of Bona, a total of 23,260 tons.

**Fabricated Steel.**—Most of the awards made during the week were for bridge work. With the exception of the Congress Street, Boston, bridge, requiring more than 1000 tons of steel, there is no prospective business of importance in the market. Competition among fabricators for small jobs, of which there are many, is keen and profits on such work are steadily declining.

**Reinforcing Steel.**—Sellers of billet steel bars are generally quoting 2.66½c. a lb., base, on lots of 100 tons and larger for shipment from

stock, but buyers have succeeded in securing some concessions. Sales of the week included 250 tons for a local roundhouse for the Boston & Albany Railroad and 150 tons for a Boston & Maine Railroad roundhouse. A Boston & Maine hotel, 250 tons, and a Boston office building, 700 tons, are still pending. The rail steel bar market continues inactive, current business being in small tonnages. The open price of 2.26½c. a lb., base, delivered common Boston freight rate points, is being shaded.

**Coke.**—A seasonal letdown in by-product foundry coke specifications is reported; yet ovens are shipping more than they did a year ago. Prices remain at \$11 a ton, delivered within a \$3.10 freight-rate zone.

**Old Material.**—A better demand for steel turnings and forge flashings has stiffened prices, but the old material market in general appears less firm that heretofore, owing to a no-

ticeable letdown in shipments. The decline in activity is attributed to a desire among buyers and dealers to await the outcome of the Pennsylvania Railroad scrap offerings. Because of the scarcity of desirable kinds of scrap the trade expects no serious setback in prices unless consumers should cease buying for a protracted spell.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$12.50 to \$12.75
Scrap T rails	11.50 to 12.00
Scrap girder rails	10.50 to 11.25
No. 1 railroad wrought	11.00 to 11.50
No. 1 yard wrought	9.00 to 9.50
Machine shop turnings	7.00 to 7.50
Cast iron borings (steel works and rolling mill)	6.50 to 6.60
Bundled skeleton, long	10.00 to 10.50
Forge flashings	10.50 to 10.75
Blast furnace borings and turnings	6.10 to 6.50
Forge scrap	9.00 to 9.25
Shafting	14.00 to 15.00
Steel car axles	18.00 to 19.00
Wrought pipe 1 in. in diameter (over 2 ft. long)	9.75 to 10.00
Rails for rolling	12.50 to 13.00
Cast iron borings, chemical	10.00 to 10.25

Prices per gross ton deliv'd consumers' yards:

Textile cast	\$14.50 to \$15.00
No. 1 machinery cast	15.00 to 15.25
No. 2 machinery cast	13.00 to 13.25
Stove plate	11.00 to 11.50
Railroad malleable	18.50 to 19.00

## Buffalo

### Steel Demand Below Average of Last Three Months—Advances in Scrap

BUFFALO, Aug. 13.—Consumers continue to buy sparingly, most contracts being limited to those upon which delivery will be completed in 30 days or less. Sellers claim increased strength in prices, with the district base at \$19.50 on No. 2 plain foundry and \$20 on malleable. In the East, shading of these prices does not exceed \$1 a ton except on the

largest inquiry, on which as low as \$18 furnace is available from Buffalo producers. An inquiry for 1500 tons of malleable iron was the only new lot of consequence listed this week as new inquiry. Sales during the past ten days have been confined to lots of 500 tons and less. There are 14 furnaces in blast in the district. Shipments are not absorbing entire production of merchant stacks.

#### Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	3.365c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Soft steel bars, small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway squares and flats	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tie steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex.	*3.55c. to 5.55c.
Squares and flats	*4.05c. to 7.05c.
Toe calk steel	6.00c.
Rivets, structural or boiler	4.50c.
Per Cent Off List	
Machine bolts	.50 and 5
Carriage bolts	.50 and 5
Lag screws	.50 and 5
Hot-pressed nuts	.50 and 5
Cold-punched nuts	.50 and 5
Stove bolts	.70 and 10

\*Including quantity differentials.

#### Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25	\$19.50
No. 2X fdy., sil. 2.25 to 2.75	20.00
No. 1 fdy., sil. 2.75 to 3.25	21.00
Malleable, sil. up to 2.25	20.00
Basic	18.50
Lake Superior charcoal	27.28

**Finished Material.**—Demand is less vigorous than its average during the past three months. Bar sales in particular have declined to some extent, with the number and size of orders showing reductions. Reinforcing bar demand is very good, and plates are moving freely. Sales of sheets have largely held their own, although price declines in black are noted, as compared with peaks of the second quarter. Several large pipe tonnages are about to be placed in this district, while fabricators also have a good late third quarter in sight. Prices are holding within \$2 of the high point of the year with shading confined largely to the most attractive lots. Warehouses have shown a slight decline in their volume of busi-

## St. Louis

### Three Sales of Basic Pig Iron Total 25,000 Tons—Dealer-Buying Causes Further Advances in Scrap

ST. LOUIS, Aug. 13. — Three large consumers of basic pig iron came into the market last week for their requirements for the remainder of the year, and placed 25,000 tons with the St. Louis Gas & Coke Corporation. Two East Side melters bought 10,000 tons each, and an equipment builder in Illinois, 5000 tons. The Granite City producer also sold 1000 tons to a local jobbing foundry for the remainder of the year, 250 tons to an Illinois stove manufacturer for August and September delivery, 250 tons to a local engine builder and 100 tons to an Oklahoma melter for prompt shipment. Melters are still disturbed over the Southern price situation. The local producer announces it has made no change in its quoted prices, but is making concessions on high phosphorus iron where it encounters Southern competition.

#### Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b.	
Granite City, Ill.	\$20.00
Malleable, f.o.b. Granite City	20.50
N'th'n No. 2 fdy., deliv'd St. Louis	22.16
Southern No. 2 fdy., deliv'd	18.92
Northern malleable, deliv'd	22.16
Northern basic, deliv'd	22.16

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

**Coke.**—Furnace coke is moving well, but there has been a slight let-up in the demand for foundry coke. Buying of domestic coke by dealers is expected to show some activity this month.

**Finished Steel.**—The Granite City Steel Co. reports that all operations are virtually on a 100 per cent basis. There has been an improvement in specifications for galvanized sheets, while there has been a slight falling off in specifications for plates. The price situation generally is firm, except in the South, where concessions on galvanized sheets have been reported. Structural fabricators find business quiet, with only small tonnages being let.

**Old Material.**—The market is in the hands of dealers, who continue to

pay advances in prices in order to stimulate shipments to cover contracts. There is said to be a considerable short interest in the trade. While consumers are pressing dealers for shipments against contracts, they are not placing much new business. No. 1 heavy melting steel is up 50c. and No. 2 grade is 25c. higher. Railroad lists: Atchison, Topeka & Santa Fe, 5883 tons; Wabash, 3060 tons; Southern Pacific, 2595 tons; Louisville & Nashville, 2270 tons; Pere Marquette, 1585 tons; Missouri-Kansas-Texas, 1500 tons; Nickel Plate, 34 carloads; Mobile & Ohio, 28 carloads; Chicago & Eastern Illinois, 18 carloads.

#### Dealers' buying prices per gross ton, f.o.b. St. Louis district:

No. 1 heavy melting or shoveling steel	\$14.50 to \$15.00
No. 2 heavy melting or shoveling steel	13.50 to 14.00
No. 1 locomotive tires	15.50 to 16.00
Miscel. stand-sec. rails including frogs, switches and guards, cut apart	16.75 to 17.25
Railroad springs	18.50 to 19.00
Bundled sheets	10.00 to 10.50
No. 2 railroad wrought	14.00 to 14.50
No. 1 busheling	10.00 to 10.50
Cast iron borings and shoveling turnings	9.50 to 10.00
Iron rails	15.00 to 15.50
Rails for rolling	17.25 to 17.75
Machine shop turnings	9.00 to 9.50
Heavy turnings	10.00 to 10.50
Steel car axles	19.00 to 19.50
Iron car axles	27.50 to 28.00
Wrot. iron bars and trans.	22.00 to 22.50
No. 1 railroad wrought	13.50 to 14.00
Steel rails, less than 3 ft.	19.00 to 19.50
Steel angle bars	14.50 to 14.75
Cast iron carwheels	14.50 to 15.00
No. 1 machinery cast	15.00 to 15.50
Railroad malleable	15.50 to 16.00
No. 1 railroad cast	15.00 to 15.50
Stove plate	12.50 to 13.00
Agricult. malleable	15.00 to 15.50
Relay. rails, 60 lb. and under	20.50 to 23.50
Relay. rails, 70 lb. and over	26.50 to 29.00

## Canada

### Large Structural Projects Up for Bids—Scrap More Active

TORONTO, ONT., Aug. 13.—The undertone of the pig iron market is improving. Inquiries are more numerous and many appear to be of the kind that will soon turn into actual sales. Small-shipment spot orders predominate, but weekly sales totals are gaining. The daily iron melt is almost at capacity. Pig iron prices are firm but unchanged.

#### Prices per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$24.60
No. 2 fdy., sil. 1.75 to 2.25	24.10
Malleable	24.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$26.00
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	24.50
Imported Iron, Montreal Warehouse	
Summerlee	\$33.50
Carron	33.00

#### Warehouse Prices, f.o.b. Buffalo

##### Base per lb.

Plates and struc. shapes	3.40c.
Soft steel bars	3.30c.
Reinforcing bars	2.95c.
Cold-fin. flats, sq. and hex.	4.45c.
Rounds	3.95c.
Cold-rolled strip steel	5.85c.
Black sheets (No. 24)	4.20c.
Galv. sheets (No. 24)	4.85c.
Blue ann'd sheets (No. 10)	3.50c.
Com. wire nails, base per keg	\$3.60
Black wire, base per 100 lb.	3.75

ness this month. Open-hearth operation shows a drop this week with 31 furnaces making steel and six idle. Finishing mill schedules are practically unchanged, however.

**Old Material.**—Small lots of No. 1 heavy melting steel have been sold to district consumers at \$18. Additional tonnage is wanted by consumers, but scarcity of supplies is making dealers cautious in booking orders. Dealers offer \$14.75 for No. 2 steel for Bethlehem. Demand for short steel rails has improved. Sales slightly above \$19.50 are reported, like prices having been paid for knuckles and couplers, also coil and leaf springs. There is a much better market for machine shop turnings, which have advanced as much as \$1 a ton from July quotations. Mixed borings and turnings for blast furnace use are selling freely. Stove plate deliveries are heavy, although no new contracts are noted. There is a fair market for No. 1 cast, with \$16 the price offered by consumers. Dealers say not only their own stocks but those of steel works have been reduced steadily and are much below the average for periods of operation comparable to that now general throughout the Buffalo district.

#### Prices per gross ton, f.o.b. Buffalo consumers' plants:

##### Basic Open-Hearth Grades:

No. 1 heavy melting steel	\$18.50 to \$19.00
No. 2 heavy melting steel	14.75 to 15.00
Scrap rails	16.50 to 17.00
Hydraul. comp. sheets	14.50 to 14.75
Hand bundled sheets	12.00 to 12.50
Drop forge flashings	14.25 to 14.50
No. 1 busheling	15.50 to 16.50
Hey. steel axle turnings	14.00 to 14.50
Machine shop turnings	8.50 to 9.00
No. 1 railroad wrought	13.00 to 13.50

##### Acid Open-Hearth Grades:

Knuckles and couplers	19.50 to 19.75
Coil and leaf springs	19.00 to 19.50
Roller steel wheels	19.00 to 19.50
Low phosph. billet and bloom ends	20.00 to 20.50

##### Electric Furnace Grades:

Short shov. steel turnings	12.00 to 12.50
Blast Furnace Grades:	
Short mixed borings and turnings	11.00 to 11.50
Cast iron borings	10.50 to 11.00
No. 2 busheling	10.00 to 10.50

##### Rolling Mill Grades:

Steel car axles	18.75 to 19.25
Iron axles	21.00 to 22.00

##### Cupola Grades:

No. 1 machinery cast	16.00 to 17.00
Stove plate	13.00 to 13.50
Locomotive grate bars	12.50 to 13.00
Steel rails, 3 ft. and under	19.50 to 19.75
Cast iron carwheels	14.00 to 14.50

##### Malleable Grades:

Industrial	18.00 to 18.50
Railroad	18.00 to 18.50
Agricultural	18.00 to 18.50

##### Special Grades:

Chemical borings	12.50 to 13.50
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#### Warehouse Prices, f.o.b. St. Louis

##### Base per lb.

Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-fin. rounds, shaftings, screw stock	3.75c.
Black sheets (No. 24)	4.25c.
Galv. sheets (No. 24)	5.10c.
Blue ann'd sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	4.30c.
Galv. corrug. sheets	5.15c.
Structural rivets	3.95c.
Boiler rivets	3.95c.

##### Per Cent Off List

Tank rivets, 7/8-in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, sq. blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-pressed nuts, hex. blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

**Structural Steel.**—While most fabricated steel awards of the week were in lots of 1000 tons, several orders pending for early closing call for 6000 and 8000 tons. Approximately 3500 tons of steel will be required for a 12-story building to be erected at Montreal, for the Montreal Star Co. Between 5000 and 6000 tons of steel will be needed for a bridge to be erected over the St. Jacques River for the Department of Public Highways, Quebec, Que., while in addition other large tonnages are in prospect for early closing. The Halifax-Dartmouth Bridge Co., Ltd., Halifax, N. S., has been formed, and proposes to build a steel bridge across Halifax Harbor. The center span will be 960 ft. long.

**Old Material.**—The market is passing out of the summer slump. New inquiries and orders are reported in better volume and activity on a par with that of May and June is looked for. Consuming plants as a whole are busy and their scrap requirements are steadily expanding. Mills, however, are well taken care of to the end of this quarter, except for fill-in supplies. The demand for steel scrap is spotty in Toronto, but is holding at a good level in the Montreal district. Prices are unchanged.

Dealers' buying prices:

	Per Gross Ton	
	Toronto	Montreal
Heavy melting steel.	\$10.00	\$8.50
Rails, scrap	11.00	9.00
No. 1 wrought.	10.00	12.00
Machine shop turnings	7.50	5.00
Boiler plate	7.50	6.00
Heavy axle turnings	8.00	7.50
Cast borings	7.50	5.00
Steel turnings	7.50	6.50
Wrought pipe	6.00	6.00
Steel axles	15.00	20.00
Axles, wrought iron.	17.00	22.00
No. 1 machinery cast	17.00	17.00
Stove plate	13.00	13.00
Standard carwheels.	15.00	16.00
Malleable	13.00	13.00
	Per Net Ton	
No. 1 mach'ry cast.	\$16.00	....
Stove plate	12.00	....
Standard carwheels.	15.00	....
Malleable scrap.	14.00	....

## Cincinnati

### Demand for Roofing Sheets Gains—Scrap Buoyant

CINCINNATI, Aug. 13.—Local sellers of pig iron are unable to report any sizable sales for the week, and furnaces, which heretofore have reported good bookings each week, received only small orders, generally for car-load lots. Except for an inquiry from the Anderson Stove Co., Anderson, Ind., for 500 to 1000 tons of either Northern or Southern iron, there is no sizable tonnage before the trade.

Prices per gross ton, deliv'd Cincinnati:

So. Ohio fdy., sil. 1.75 to 2.25	\$19.89 to \$20.39
Ala. fdy., sil. 1.75 to 2.75	17.69 to 18.19
Ala. fdy., sil. 2.25 to 2.75	18.19 to 18.69
Tenn. fdy., sil. 1.75 to 2.25	17.69 to 18.19
S'th'n Ohio silvery, 8 per cent	26.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

**Finished Material.**—Increasing demand for highway and roofing sheets caused the bookings of district sheet mills to exceed production during the

### Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and struc. shapes	3.40c.
Bars, soft steel or iron	3.30c.
New billet reinfrc. bars	3.15c.
Rail steel reinfrc. bars	3.00c.
Hoops	4.05c.
Bands	3.50c.
Cold-fin. rounds and hex.	3.85c.
Squares	4.35c.
Black sheets (No. 24)	4.05c.
Galvanized Sheets (No. 24)	4.90c.
Blue ann'd sheets (No. 10)	3.45c.
Structural rivets	3.85c.
Small rivets	.65 per cent off list
No. 9 ann'd wire, per 100 lb.	\$3.00
Com. wire nails, base per keg.	2.85
Cement c'd nails, base 100 lb. keg.	2.85
Chain per 100 lb.	8.75
	Net per 100 Ft.
Lap-weld steel boiler tubes, 2-in.	\$16.00
4-in.	33.00
Seamless steel boiler tubes, 2-in.	17.00
4-in.	34.00

past week and accordingly backlogs were expanded slightly. This gain in demand, combined with the heavy specifications from manufacturers of electrical devices, metal furniture and similar products, has offset the recession in automotive demand in all lines except high-finished sheets and cold-rolled strip. In these latter two products, district mills report that prompt deliveries can be made, but that in other lines shipments are still well extended. The price situation on galvanized sheets is showing improvement and it is believed that few, if any, further concessions will be encountered. The slackening of building operations here has noticeably affected structural steel demand, and fabricators report that their market is dull.

**Coke.**—Specifications on by-product foundry coke are heavier. District oven representatives state that, should

coke continue to be taken on contract at the present rate, the total amount moved in August will be about equal to the July tonnage, which was the largest since March. New business continues to be quiet and, except for occasional spot shipments, fresh bookings are negligible.

**Old Material.**—With mill production continuing at a good rate and the better grades of scrap becoming increasingly scarce, the market here is firmer than at any time within the last four months. In fact, dealers continue to bid higher for heavy melting steel and similar grades, but even more attractive prices fail to bring out sufficient material to cover commitments. This situation has reduced yard stocks noticeably and the only accumulation of scrap on hand is in the cast iron grades. Accordingly, further price increases of 25c. a ton have been made on heavy melting steel and No. 2 railroad wrought, and the spread on cast iron borings has been broadened by making the top quotation \$9.75, while No. 1 machinery cast is down 25c.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel	\$14.00 to \$14.50
Scrap rails for melting	14.00 to 14.50
Loose sheet clippings	9.00 to 9.50
Bundled sheets	11.00 to 11.50
Cast iron borings	9.25 to 9.75
Machine shop turnings	8.50 to 8.75
No. 1 busheling	10.50 to 11.00
No. 2 busheling	7.00 to 7.50
Rails for rolling	14.50 to 15.00
No. 1 locomotive tires	14.25 to 14.75
No. 2 railroad wrought	14.00 to 14.50
Short rails	18.50 to 19.00
Cast iron carwheels	12.75 to 13.25
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	15.25 to 15.75
Burnt cast	10.25 to 10.75
Stove plate	10.25 to 10.75
Brake shoes	10.25 to 10.75
Agricultural malleable	14.25 to 14.75
Railroad malleable	15.25 to 15.75

## Detroit

### Further Increase in Ford Production Scheduled for August—Better Steel Demand Looked For

DETROIT, Aug. 13.—The automotive industry, as usual, holds the center of the stage in this district, with the low-priced cars right in front of the footlights. The lead developed last month by the Ford Motor Co. seems to be increasing, as it is understood that the Ford company has scheduled 190,000 units for August, while the Chevrolet Motor Co. will probably not get within 50,000 units of that total.

Complete statistics on July motor car production have not yet been received, but of those companies which

have made returns, about half exceeded their estimated output for the month. The manufacturers whose final figures show an increase over early estimates for July are the Hupp Motor Car Corporation, Olds Motor Work, Graham-Paige Motors Corporation, H. H. Franklin Mfg. Co. and the Chrysler Corporation.

The Packard Motor Car Co. will introduce new models at increased prices some time during the fall. These will be eight-cylinder cars.

The Auburn Automobile Co.'s, new

ESTIMATED AUTOMOBILE PRODUCTION FOR AUGUST  
(Actual Figures for June and July Shown)

	June	July	August (Estimated)
Auburn	3,144	2,026	2,000
Buick	14,665	26,279	30,000
Chevrolet	151,297	137,831	135,000
Chrysler	42,351	27,171	32,000
Ford	177,419	175,000	190,000
Franklin	1,405	1,325	1,200
Graham-Paige	5,987	4,849	4,500
Hudson-Essex	31,737	23,707	20,000
Hupmobile	2,030	2,494	2,500
Nash	9,070	6,672	7,000
Oldsmobile and Viking	7,361	11,220	12,000



Cord model, with a price range slightly over \$3,000, is now under production, with a schedule for August of 1100 units. The rate will be gradually increased to a maximum of 1500 units a month.

The table on page 441 shows the production standing for the month just passed, in comparison with that for June and the estimated production for August:

Steel commitments from the automotive plants are not coming in as fast as might be desired, but a general improvement is looked for to take care of the expected production increases for September and October. Mill prices are generally firm.

Structural steel demand in this district has been light, but apparently a change is due in the next 10 days, when a number of small and medium-sized jobs will be announced for bids.

One of these is a telephone building at Benton Harbor, Mich., which will probably require 360 tons. There are also projected telephone buildings at Saginaw and Detroit which have not yet progressed far enough to permit estimates of the steel tonnage.

The market on waste material in this district continues firm but no changes in price have been registered during the past week.

*Dealers' buying prices per gross ton, f.o.b. cars, Detroit:*

Hvy. melting and shov.	
steel .....	\$14.25 to \$14.75
Borings and short turnings	9.00 to 9.50
Long turnings .....	8.50 to 9.00
No. 1 machinery cast .....	12.50 to 13.00
Automobile cast .....	13.00 to 13.50
Hydraulic comp. sheets .....	14.00 to 14.50
Stove plate .....	9.00 to 9.50
New No. 1 busheling .....	12.50 to 13.00
Old No. 1 busheling .....	11.00 to 11.50
Sheet clippings .....	8.75 to 9.25
Flashings .....	13.00 to 13.50

## Fabricated Structural Steel

### Railroad Work Will Take Almost 75 Per Cent of Total Awards of 43,000 Tons

**R**AILROAD work played a conspicuous part in structural steel lettings the past week, awards by carriers having accounted for close to 75 per cent of the total of 43,000 tons. Over 19,000 tons will go into the construction of highway and railroad bridges. For the first time in many weeks non-industrial projects were a comparatively minor factor in the market. Outstanding transactions were 14,500 tons for two bridges across the Hackensack River in New Jersey for the Pennsylvania Railroad and 9400 tons for a New York subway section.

Highway and railroad bridges were the largest single source of new inquiries during the week. Slightly more than 16,000 tons out of a total of 42,000 tons of fresh work will be required for that purpose. Among the jobs on which bids are being taken are 7000 tons for a highway bridge at Toledo, 6000 tons for a New York bank building and 5000 tons each for a highway bridge at Quebec and for a bank building at Akron, Ohio. Awards follow:

Boston, 250 tons, River Street bridge, to Boston Bridge Works, Inc.  
 Boston, 160 tons, Lamson & Hubbard Co. store, to unnamed fabricator.  
 Beverly, Mass., 200 tons, Bass River bridge, to Boston Bridge Works, Inc.  
 Gould's Mill, Vt., 200 tons, bridge, Springfield Terminal Railway, to Boston Bridge Works, Inc.  
 Central Vermont Railway, 200 tons, bridge at White River Junction, Vt., to American Bridge Co.  
 Boston & Maine Railroad, 190 tons, machine shop at Somerville, Mass., to New England Structural Co.  
 New York, 300 tons, building at 1418 Broadway, to Taylor-Fichter Steel Construction Co., Inc.  
 New York, 2000 tons, office building at Madison Avenue and Fifty-seventh Street, to Taylor-Fichter Steel Construction Co., Inc.  
 New York, 1500 tons, hotel at Sixty-seventh Street and Broadway, to Dreier Iron Works, Inc.  
 New York, 500 tons, building for Lawyers' Club at 16 Vesey Street, to Taylor-Fichter Steel Construction Co., Inc.  
 New York, 500 tons, 170th Regiment Armory, to Dreier Iron Works, Inc.  
 New York, 9400 tons, route 106, section 6, of subway, to McClintie-Marshall Co.  
 Pennsylvania Railroad, 14,500 tons; bridges over Hackensack River in New Jersey 10,000 tons for passenger

bridge, to American Bridge Co.; 4500 tons for freight bridge, to Phoenix Bridge Co.  
 Pennsylvania Railroad, 1100 tons, bridges; 500 tons to American Bridge Co. and 600 tons to McClintie-Marshall Co.  
 Lebanon, Pa., 180 tons, silk mill, to Progressive Iron Works, Reading, Pa.  
 Reading, 325 tons, building for Y. M. C. A., to Progressive Iron Works.  
 Seaboard Air Line, 200 tons, bridge at Raleigh, N. C., to American Bridge Co.  
 New Kensington, Pa., 1300 tons, United States Aluminum Co., to McClintie-Marshall Co.  
 Lansing, Mich., 1600 tons, power house, to Whitehead & Kales.  
 Detroit, 200 tons, bridge for Detroit, Toledo & Shore Line Railroad, to American Bridge Co.  
 Ecorse, Mich., 375 tons, bridges at Highland Park and Ecorse for Detroit, Toledo and Ironton Railroad, to American Bridge Co.  
 Greenfield, Ohio, 700 tons, bridge for Detroit, Toledo and Ironton Railroad, to American Bridge Co.  
 Cleveland, 445 tons, First Christian Science Church, to Massillon Bridge & Structural Co.  
 Big Four Railroad, 1000 tons, bridge construction, to American Bridge Co.  
 Chicago, 425 tons, Swift & Co., fertilizer plant, to Rochester Bridge Co., Rochester, Ind.

Chicago, 100 tons, building for Pie Bakers of America, to Midland Structural Steel Co., local.

Chicago, Milwaukee, St. Paul & Pacific, 3200 tons; 2000 tons for car repair shops at Milwaukee, to Worden-Allen Co.; 1200 tons for grade separation work, to American Bridge Co.

East St. Louis, Ill., 800 tons, mill building for Laclede Steel Co., to St. Louis Structural Steel Co.

Rockford, Ill., 400 tons, Rockford Drop Forge Co., to Wisconsin Bridge Co.

Kenosha, Wis., 200 tons, Young Men's Christian Association Building, to an unnamed bidder.

Northern Pacific, 375 tons, viaduct at Superior, Wis., to American Bridge Co.; previously reported to an unnamed bidder.

Sawtelle, Cal., 100 tons, Soldiers' Home addition, to Brombacher Iron Works.

Olympia, Wash., 100 tons, bridge over Soldue River, to Isaacson Iron Works.

Boise, Idaho, 257 tons, reclamation work for United States Bureau of Reclamation, to unnamed interest.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

Boston, 600 tons, South Station.  
 New York, 1000 tons, building for Gordon Baking Co. in Queens.  
 New York, 6000 tons, Farmers Loan & Trust Co. building; general contract to George A. Fuller Co.  
 State of New Jersey, 2000 tons, bridge over Hackensack River; J. F. Chapman & Son, Hillside, N. J., low bidder on general contract.  
 Philadelphia, 500 tons of sheet steel piling, Dorset Boulevard.  
 Philadelphia, 1500 tons, reported as 800 last week, Henry Street Bridge.  
 Jamaica, N. Y., 700 tons, garage for Nash Motors Co.  
 Montreal, 3500 tons for Montreal Star Co.  
 Quebec, 5000 tons, bridge over St. Jacques River for Department of Public Highways.  
 Rochester, N. Y., 3500 tons, city bridge.  
 Niles, Ohio, 500 tons, Niles Trust Co. Building.  
 Akron, Ohio, 5000 tons, bank and office building for Central Savings & Trust Co.  
 Toledo, 7000 tons, previously reported with tonnage unstated, Maumee River bridge; bids taken.  
 Cleveland, 600 tons, two grade elimination bridges for Cleveland Suburban Railway Co.  
 Cleveland, 2000 tons, jail courts building.  
 Cleveland, 200 tons, Lakewood sales and service station for Packard Motor Car Co.  
 Cleveland, 250 tons, hangar for Curtiss Aircraft Corporation.  
 Findlay, Ohio, 150 tons, building for Ohio Oil Co.  
 Powerton, Ill., 3000 tons, power house; Sargent & Lundy, engineers.  
 Chicago, tonnage not stated, food products building; Burnham Brothers, Inc., architects.  
 Chicago, tonnage not stated, 31-story garage; J. B. French & Co., general contractor.  
 Sturgeon Bay, Wis., tonnage not stated, 140-ft. lift span.  
 East St. Louis, Ill., 425 tons, Curtiss Airport building.  
 Dallas, Tex., 1200 tons, building for Bell Telephone Co.  
 Phoenix, Ariz., 400 tons, building for the Calumet & Arizona Mining Co.  
 Seattle, 700 tons sheet piling, sea wall on Alki Street; bids opened.

# Non-Ferrous Metal Markets

## Copper Demand Increasing, Tin Quiet and Steady, Zinc and Lead Firm

NEW YORK, Aug. 15.

**Copper.**—July statistics favorable to sellers, and expanding sales have been factors influencing a stronger copper market. In July, according to the American Bureau of Metal Statistics, there was an increase in stocks of refined copper of 14,689 tons over June and a decrease of 12,000 tons in blister copper. Thus the increase in copper above ground for the month was a little over 2500 tons. In view of the fact that only 40,200 tons was shipped abroad, as compared with 50,000 to 55,000 tons normally, this increase is considered bullish. Shipments to domestic consumers at 138,900 tons in July were about 4800 tons less than in June, while the foreign shipments last month were about 8200 tons less than in the previous month. A significant fact is that production at the mines at 2559 tons per day was nearly 200 tons per day less in July than in June and was about 600 tons per day less than the peak of 3163 tons in April, when curtailment in production was started; the July daily rate is the smallest since August last year. Sales of copper are reported as eminently satisfactory under present conditions. The total thus far to foreign consumers has been about 21,000 tons this month. Domestic sales are rapidly expanding, having been about 17,000 tons last week as compared with about 11,000 tons the week before and 4000 tons per week during the recent dull markets in the past two months. Prices continue very firm and unchanged. Electrolytic copper is quoted at 18c. delivered in the Connecticut Valley, with the official quotation of Copper Exporters, Inc., at 18.30c., c.i.f. usual European ports. There has been no change in these quotations since the middle of April. Lake copper is also firm and unchanged at 18 to 18.12½c., delivered.

**Tin.**—Sales of spot Straits tin for the week ended Saturday, Aug. 10, were about 1200 tons. The action of the Federal Reserve Board in increasing its rate from 5 to 6 per cent on Aug. 8 had its effect on the tin market in London, together with some sentimental influence on other metals. On the following day the London market declined and, because of this, sales in New York amounted to 600 tons. This was practically all bought by consumers, with deliveries as far ahead as March. It is believed that

### THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Aug. 13	Aug. 12	Aug. 10	Aug. 9	Aug. 8	Aug. 7
Lake copper, New York.....	18.12½	18.12½	18.12½	18.12½	18.12½	18.12½
Electrolytic copper, N. Y. ....	17.75	17.75	17.75	17.75	17.75	17.75
Straits tin, spot, N. Y. ....	46.37½	46.50	46.50	46.62½	46.87½	47.00
Zinc, East St. Louis.....	6.80	6.80	6.80	6.80	6.80	6.80
Zinc, New York.....	7.15	7.15	7.15	7.15	7.15	7.15
Lead, St. Louis.....	6.55	6.55	6.55	6.55	6.55	6.55
Lead, New York.....	6.75	6.75	6.75	6.75	6.75	6.75

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

### Rolled Products

Prices on rolled non-ferrous products are unchanged from those prevailing one week ago.

#### List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

<b>Sheets—</b>	
High brass .....	23.25c.
Copper, hot rolled.....	26.75c.
Zinc .....	10.25c.
Lead (full sheets).....	11.00c. to 11.25c.
<b>Seamless Tubes—</b>	
High brass .....	28.25c.
Copper .....	29.25c.
<b>Rods—</b>	
High brass .....	21.25c.
Naval brass .....	24.00c.
<b>Wire—</b>	
Copper .....	19.87½c.
High brass .....	23.75c.
Copper in Rolls .....	26.75c.
Braced Brass Tubing.....	30.87½c.

#### Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide .....	33.00c.
Tubes, base .....	42.00c.
Machine rods .....	34.00c.

### Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

<b>Sheets—</b>		Base per Lb.
High brass .....	23.25c.	
Copper, hot rolled.....	27.75c.	
Copper, cold rolled, 14 oz. and heavier .....	30.00c.	
Zinc .....	10.75c.	
Lead, wide .....	11.35c.	
<b>Seamless Tubes—</b>		
Brass .....	28.25c.	
Copper .....	29.25c.	
Brass Rods .....	21.25c.	
Braced Brass Tubes.....	31.00c.	

### New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

<b>Sheets—</b>	
High brass.....	21.12½c. to 22.12½c.
Copper, hot rolled, base sizes.....	27.75c. to 28.75c.
Copper, cold rolled, 14 oz. and heavier, base sizes.....	30.00c. to 31.00c.
<b>Seamless Tubes—</b>	
Brass .....	26.00c. to 27.00c.
Copper .....	29.12½c. to 30.12½c.
Braced Brass Tubes.....	29.12½c. to 30.12½c.
Brass Rods.....	18.87½c. to 19.87½c.

### New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9), casks .....	10.50c. to 11.00c.
Zinc sheets, open.....	11.50c. to 12.00c.

### Metals from New York Warehouse

Delivered Prices, Per Lb.

Tin, Straits pig.....	48.00c. to 49.00c.
Tin, bar .....	50.50c. to 51.50c.
Copper, Lake .....	19.50c.
Copper, electrolytic .....	19.25c.
Copper, casting .....	19.00c.
Zinc, slab .....	7.75c. to 8.25c.
Lead, American pig.....	7.50c. to 8.00c.
Lead, bar .....	9.50c. to 10.00c.
Antimony, Asiatic .....	10.50c. to 11.00c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure) .....	25.00c. to 26.00c.
Alum. ingots, No. 12 alloy.....	24.00c. to 25.00c.
Babbitt metal, commercial grade.....	25.00c. to 35.00c.
Solder, ½ and ½.....	30.75c. to 31.75c.

### Metals from Cleveland Warehouse

Delivered Prices, Per Lb.

Tin, Straits pig.....	52.00c.
Tin, bar .....	54.00c.
Copper, Lake .....	19.50c.
Copper, electrolytic .....	19.25c.
Copper, casting .....	19.75c.
Zinc, slab .....	7.75c. to 8.00c.
Lead, American pig.....	7.25c. to 7.50c.
Lead, bar .....	9.75c.
Antimony, Asiatic .....	16.00c.
Babbitt metal, medium grade.....	18.75c.
Babbitt metal, high grade.....	56.00c.
Solder, ½ and ½.....	31.75c.

### Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged customers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible.....	14.75c.	16.25c.
Copper, hvy. and wire .....	14.50c.	15.75c.
Copper, light and bottoms .....	12.50c.	13.75c.
Brass, heavy .....	8.50c.	9.50c.
Brass, light .....	7.50c.	8.50c.
Hvy. machine composition .....	12.00c.	13.00c.
No. 1 yel. brass turnings .....	9.75c.	10.50c.
No. 1 red brass or compos. turnings.....	11.25c.	12.25c.
Lead, heavy .....	5.25c.	5.75c.
Lead, tea.....	4.25c.	5.25c.
Zinc .....	3.50c.	4.25c.
Sheet aluminum.....	14.00c.	16.00c.
Cast aluminum.....	12.25c.	14.25c.

consumers here are well covered for this year and that they took advantage of the lower prices to cover future requirements. London quotations have been unusually steady up to Aug. 9, due largely to the support given to the market by the so-called "group." Prices at Singapore today were £217, equivalent to about 47c., New York. Thus, values in the Far East are still high relative to the London and New York markets. In London today spot standard was quoted at £208 10s., future standard at £212 10s. and spot Straits at £212. A fair business was reported in New York today with spot Straits quoted at 46.37½c.

**Lead.**—Demand is a little quieter than it was last week, but sales, which are largely confined to spot and nearby delivery of carload and small lots, continue in fair volume. There is some September business going, but the bookings are not yet large. Prices are very firm at 6.55c. St. Louis. The quotation of the leading interest is unchanged at 6.75c. New York.

**Zinc.**—The market is devoid of news features. Prices continue firm for Prime Western with most producers asking 6.80c. East St. Louis, or 7.15c., New York. Most orders, which are small, are for early shipment. The manifestation of increasing interest last week in future delivery has not continued to be evident

thus far this week. Production of ore in the Joplin district was estimated at 13,500 tons, which was offset by nearly an equivalent amount of shipments. The ore surplus is now estimated at about 45,000 tons. The price is unchanged at \$44 per ton, Joplin.

**Antimony.**—In a quiet market Chinese metal is quoted at 8.75c. for spot and 8.62½c. for future, duty paid, New York.

**Nickel.**—Wholesale lots of ingot nickel are quoted at 35c. per lb., shot nickel at 36c. and cathode electrolytic nickel at 35c.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is obtainable at 23.90c. per lb., delivered, according to published quotations.

#### Non-Ferrous Metals at Chicago

CHICAGO, Aug. 13.—This market is less active both in sales and inquiry. Prices for tin are easier while quotations on lead are advanced. The old metal market is quiet.

**Prices per lb., in carload lots:** Lake copper, 18.50c.; tin, 47.62½c.; lead, 6.70c.; zinc, 6.87½c.; in less-than-carload lots, antimony, 9.62½c. On old metals we quote copper wire, crucible shapes and copper clips, 14c.; copper bottoms, 11.50c.; red brass, 11.50c.; yellow brass, 8c.; lead pipe, 4.50c.; zinc, 3.25c.; pewter, No. 1, 24.50c.; tin foil, 26c.; block tin, 36c.; aluminum, 12.87½c.; all being dealers' prices for less-than-carload lots.

SAN FRANCISCO, 600 tons, Shell Oil building, to Soule Steel Co.

#### Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

HARTFORD, CONN., 700 tons, warehouse.  
NEW YORK, 500 tons, boardwalk at Rockaway Beach.

TOLEDO, 130 tons, Maumee River bridge.  
CHICAGO, tonnage not stated, apartment building on North Sheridan Road; Levy & Klein, architects.

CHICAGO, 100 tons, garage on Plymouth Court; J. B. Franch, general contractor.  
CHICAGO, 150 tons, public school.

HENSDALE, ILL., 200 tons, sewage disposal plant.  
STOCKTON, CAL., 150 tons, theater; bids Aug. 12.

SAN FRANCISCO, 630 tons, printing plant on First Street; bids being taken.

#### Lincoln Company Enlarges Plant

To provide increased manufacturing facilities, the Lincoln Electric Co., Cleveland, manufacturer of Linco-Weld motors and Stable-Arc welders, has placed contracts for the erection of a plant addition which will add approximately ½ acre more floor space. The new structure will be approximately 110 x 200 ft. and will have a 65-ft. span electric traveling crane. Steel structure is to be fabricated by the arc welding process in the plant of the Austin Co., Cleveland, which designed and will erect the building.

## Railroad Equipment

### Central of Georgia Will Buy 500 Box Cars

FRESH inquiries for almost 1300 cars, including 500 box cars for the Central of Georgia, 400 refrigerator cars for the Pacific Fruit Express and 200 gondola underframes for the Santa Fe, appeared during the past week. Aside from the purchase of 300 flat cars by the Northern Pacific, buying has been negligible. The Texas & Pacific has placed an order for 15 oil-burning locomotives. Details of the week's business follow:

Santa Fe is in market for 200 gondola underframes.

New York, New Haven & Hartford is inquiring for 12 steel underframes for wooden baggage cars and for from 2 to 20 oil-electric rail motor cars. This railroad has ordered one club car from Osgood Bradley Car Co.

Central of New Jersey is asking for revised bids on 250 70-ton steel mill gondola cars.

Pacific Fruit Express is expected to buy 400 50-ton refrigerator cars.

Patapsco & Back River has ordered two locomotives from Baldwin Locomotive Works.

Texas Corporation is inquiring for four tank cars.

Moss Tie Co. has contracted for one special box car with Mount Vernon Car Mfg. Co.

Philadelphia & Reading Coal & Iron Co. has purchased 10 automatic drop dump cars from American Car & Foundry Co. and three 30-ton electric locomotives from Westinghouse Electric & Mfg. Co.

Braden Copper Co. has ordered 23 30-ton flat cars from American Car & Foundry Co.

Phillips Petroleum Co. has ordered 10 tank cars from General American Tank Car Corporation and five tank cars from American Car & Foundry Co.

Cities Service Tank Line has bought four tank cars from American Car & Foundry Co.

Texas & Pacific has bought 15 oil-burning locomotives from Lima Locomotive Works.

Chicago & North Western will buy 150 tram cars.

Central of Georgia is in market for 500 box cars and may make inquiry for 50 flat cars.

Northern Pacific has ordered 300 flat cars from Siems-Stemle Co.

### Unfilled Brass Ingot Orders

CHICAGO, Aug. 12.—On August 1, unfilled orders for brass and bronze ingots and billets on the books of the members of the Non-Ferrous Ingot Metal Institute amounted to a total of 13,243 net tons, according to an announcement of the institute issued today. This compares with 13,339 tons on June 1, with 17,215 tons on May 1, and with 22,755 tons on April 1.

Hickman, Williams & Co. have been made agents in the Chicago district for Pioneer iron, which is produced by Republic Iron & Steel Co.

## Reinforcing Steel

### Awards Total Only 4800 Tons and Inquiries 2600 Tons

QUIETNESS still exists in reinforcing steel, awards in the past week having totaled only 4800 tons. Eight hundred tons was for an office building in Chicago and 600 tons for an office structure in San Francisco. New inquiries will require 2600 tons. Awards follow:

BOSTON, 250 tons, Boston & Albany roundhouse, to Truscon Steel Co.

SOMERVILLE, MASS., 150 tons, Boston & Maine roundhouse, to Joseph T. Ryerson & Son, Inc.

NEW YORK, 270 tons, route 106, section 6, of subway, to McClintic-Marshall Co.

NEW YORK, 300 tons, building at 40 Wall Street, to Carroll-McCreary Co., Inc.

NEWARK, N. J., 600 tons, building for Packard Motor Car Co., to Igce Brothers.

CHICAGO, 800 tons, Trustee System building, to Calumet Steel Co.

CHICAGO, 400 tons, building for Warner Brothers, Inc., to an unnamed bidder.

CHICAGO, 100 tons, West Town Bank building, to Calumet Steel Co.

CHICAGO, 150 tons, Parker public school, to an unnamed bidder.

CHICAGO, 100 tons, Woolworth store, to Concrete Engineering Co.

BERWYN, ILL., 160 tons, bank building, to Calumet Steel Co.

SAN FRANCISCO, 400 tons, warehouse for American Can Co., to Soule Steel Co.

SAN FRANCISCO, 175 tons, abattoir, to W. S. Wetherhall Co.



## PERSONAL

ROBERT W. WOLCOTT, president Lukens Steel Co., sailed Aug. 3 on the DeGrasse for a two months' trip to European countries. H. B. SPACKMAN, formerly vice-president and a member of the board of directors, also is in Europe for the summer.

HERMAN ARBER, who has been manager of the coil department of the Dudlo Mfg. Co., Fort Wayne, Ind., subsidiary of the General Cable Corporation, has been appointed General plant superintendent, succeeding WENDELL C. GLASS, who recently resigned. GEORGE KIERSPE, manager of the Dudlo coil department at Rome, N. Y., will assume Mr. Arber's former duties at Fort Wayne.

EDWIN KARLSON has been made vice-president in charge of manufacturing of the Peerless Motor Car Corporation, Cleveland. He was formerly with the Marmon Motor Car Co., Indianapolis. S. T. Creighton, also formerly with the Marmon company, has been appointed purchasing agent.

GEORGE P. LENZ has been appointed purchasing agent of the Corrigan, McKinney Steel Co., Cleveland, to succeed JOHN FIELDING, who has tendered his resignation, effective Sept. 1, to become associated with the Butler Consolidated Coal Co., Cleveland. Mr. Lenz has been with the company about 25 years, and for some time has been assistant purchasing agent.

CHARLES E. GRIFFITH has resigned as treasurer and director of the Illinois Iron & Bolt Co., Carpentersville, Ill., after having served the organization for 56 years. He was made secretary of the company in 1888 after having filled the position of bookkeeper for 25 years. At various times he acted as purchasing agent, and for many years has been a director of the company.

WALTER H. UNDERWOOD, formerly sales manager for the St. Louis Coke & Iron Co., is now in the pig iron sales department of the Chicago office of Hickman, Williams & Co.

CHARLES M. EASTERLY, formerly with the Inland Steel Co., Chicago, has been elected first vice-president in charge of sales of the Canton Rolling Mills Corporation, Canton, Ohio.

S. S. PORTER, vice-president, Calumet Steel Co., Chicago, returned Aug. 8 from a six weeks' motor trip through England and Scotland.

C. K. EVERITT, managing director and works manager, Edgar Allen & Co., Ltd., Sheffield, England, will attend the convention of the American Society for Steel Treating in September at Cleveland, in company with American agents for Allen steels.

PAUL A. MEEHAN, formerly with the American Dressler Tunnel Kilns, Inc., Cleveland, has been placed in charge of the newly-organized tunnel kiln department of the Simplex Engineering Co., Washington, Pa.

WILLIAM MCBRIDE, up to a year ago president of the Fort Pitt Spring & Mfg. Co., Pittsburgh, has been elected president of the Mead-Penn Iron Works Co., Meadville, Pa., succeeding OTTO KOHLER.

W. D. LITTLE, of the Hoskins Mfg. Co., Detroit, has been reelected chairman of the electric furnace section of the National Electrical Manufacturers Association, New York, and R. F. BENZINGER, associated with the Electric Furnace Co., Salem, Ohio, has been reelected secretary.

ALAN G. CARY has been appointed representative in the St. Paul and Minneapolis territory, with offices at 204 Endicott Building, St. Paul, for the Union Chain & Mfg. Co., Sandusky, Ohio.

WILLIS B. KYLE, who resigned July 1 as vice-president and general manager of the McClintic-Marshall Co., of California, has purchased a one-third interest in the Modern Iron Works, Los Angeles. He is being succeeded as manager of the McClintic-Marshall Co. in the Los Angeles district by E. F. GOHL.

PHILIP DRESSLER, president, American Dressler Tunnel Kilns, Inc., Cleveland, will personally take charge of all engineering and design work in connection with tunnel kiln installations. L. A. VINCENT, vice-president, will take care of the thermal engineering department of the company.

P. F. BAILLET has been made manager of foreign sales, with offices at 461 Eighth Avenue, New York, for Ampeo Twist Drill Co., Jackson, Mich.

E. F. DUBRUL, general manager, National Machine Tool Builders' Association, Cincinnati, has been appointed on the council of the American Institute of Weights and Measures in place of the late Worcester R. Warner.

FREDERICK H. PAYNE, president of the Greenfield Tap & Die Corporation, Greenfield, Mass., has been made president of the newly created Massachusetts Industrial Commission.

GEORGE McLAUGHLIN, for a number of years a member of the Cincinnati office of the American Sheet & Tin

Plate Co., has been promoted to assistant manager of sales at Cincinnati.

WILLIAM FORSSTROM, for the last nine years chief engineer of the Wisconsin Steel Works, International Harvester Co., has retired on account of ill health. He will make his permanent home in Tucson, Ariz., where he has business interests. Previous to his connection with the Wisconsin Steel Works, he was for four years chief engineer for the Youngstown Sheet & Tube Co., with headquarters at Youngstown. For 13 years Mr. Forsstrom was chief engineer for the LaBelle Iron Works, and previous to that he served the Jones & Laughlin Steel Corporation.

GEORGE W. DAVIS, Chicago branch manager of Gears & Forgings, Inc., has been transferred to the Milwaukee office, where he will have charge of sales.

O. H. AMMANN, engineer of the Fort Lee suspension bridge across the Hudson River, and GUSTAV LINDENTHAL, engineer of the Hell Gate Bridge, New York, have been added to the staff of the Rosenwald Museum of Industry and Science, Chicago.

E. R. S. REEDER, formerly district manager of sales for the Ludlum Steel Co., has been appointed manager of special contracts of the Widia department by Thomas Prosser & Son, New York, agents in the United States for Friedrich Krupp, A. G., Germany.

GEORGE R. HARRISON has been appointed Cleveland representative, with offices in the Rockefeller Building, for the Reading Chain & Block Corporation.

### To Consolidate Aircraft and Propeller Companies

The Standard Steel Propeller Co., Pittsburgh, and the United Aircraft & Transport Corporation, New York, will be consolidated, pending the approval of holders of 75 per cent of the stock of the Standard Company. The United Company, which was formed several months ago by a merger of several large airplane and air transport companies, already controls the Hamilton Propeller Co.

The Standard company has been manufacturing steel propellers for some time and is at present working on plant additions at Homestead, Pa., which will quadruple present output. The company will remain at Pittsburgh and present officers will probably be retained.

The Ohio Gear Co., Cleveland, has appointed A. R. Young, Indianapolis, as its representative in western Ohio and in Indiana; the Specialty Sales & Engineering Co., in western Pennsylvania; and the E. G. Long Co., New York, in the New York district.

## OBITUARY

HENRY S. PICKANDS, member of the firm of Pickands, Mather & Co., Cleveland, and prominent in the iron ore, pig iron and shipping industry, died of heart failure Aug. 10, in his office. He was 53 years of age. Mr. Pickands was born in 1875 in Marquette, Mich., and when he was six years of age his parents moved to Cleveland. He was



HENRY S. PICKANDS

graduated from University School, Cleveland, in 1894, and from Sheffield Scientific School of Yale University in 1897. On leaving college he went to work in the office of Pickands, Mather & Co., which had been founded in 1881 by his father, Col. James Pickands, and Samuel Mather. He became a partner in the firm in 1900. He devoted special attention to the operation of blast furnaces and docks and to the purchasing department of the firm. Aside from his membership in Pickands, Mather & Co., he had various business connections, being a director of the American Shipbuilding Co., vice-president of the Great Lakes Towing Co., director of the Union Trust Co., vice-president of the Interlake Steamship Co., all of Cleveland, and a member of the executive committee of the Empire Steel Corporation, Mansfield, director of the Zenith Furnace Co., Duluth, and president of the Toledo Furnace Co., Toledo. He took a deep interest in civic affairs and was noted for his philanthropies. He was chairman of the board of trustees of University School, Cleveland, and its leading benefactor. Always an ardent prohibitionist, he had been president of the Dry Maintenance League of Cleveland for the past nine years and at times took an active part in political campaigns as a speaker in behalf of prohibition. He was a member of the Cleveland Chamber of Commerce, Union Club, and University Club of Cleveland, Yale Club of New York, and various other clubs. Mr. Pickands was the second

member of the firm to be taken away suddenly this year, Harry Coulby, another of the partners, having died early in the year.

THOMAS E. GRIFFITH, for twelve years general manager of the W. S. Tyler Co., Cleveland, died Aug. 10, following an operation. He was 50 years of age and became connected with the company as an office boy about 35 years ago.

MERTLAND M. HEDGES, formerly president of the Hedges-Walsh-Weidner Co., Chattanooga, Tenn., manufacturer of boilers, died at his home at Signal Mountain, Tenn., on Aug. 7, aged 69 years. Many years ago he and James F. Casey purchased the Webb Boiler Works at Chattanooga, changing its name to the Casey-Hedges Co. In 1927 it was consolidated with the Walsh & Weidner Boiler Co., as the Hedges-Walsh-Weidner Co. Mr. Hedges served as president of the new company until a few months ago, when he retired.

J. C. WARD, managing director of Edgar Allen & Co., Ltd., Sheffield, England, and also a director of the Edgar Allen Steel Co., Inc., New York, died Aug. 8, aged 66 years. He was at one time president of the American company and also was formerly president of the American Manganese Steel Co., Chicago.

LUTHER B. McMILLAN, consulting engineer of Johns-Manville, Inc., New York, died Aug. 10, as the result of injuries received when the airplane of which he was owner and pilot crashed near the Newark, N. J., Metropolitan Airport on the evening of Aug. 9. He was an ardent aviator and had made many extended trips throughout the country. He was born at Bem, Mo., Sept. 21, 1891, and was graduated from the Texas Agricultural and Mechanical College in 1911. After being awarded a fellowship at the College of Engineering of the University of Wisconsin, he was an instructor for two years at that institution. Since 1916 he has been identified with the Johns-Manville company. He was a conspicuous member of the American Society of Mechanical Engineers, being a member of the council of the society at the time of his death.

WALTER BRADLEE SNOW, retired engineer, publicity man, and advertising agent, died at Falmouth, Mass., Aug. 9, aged 68 years. He was graduated from the Massachusetts Institute of Technology in 1882. In 1907 he organized Walter B. Snow and Associates as publicity engineers. He was president of the Reversible Collar Co.,

a trustee of the Watertown Savings Bank, and past secretary of the Massachusetts Commission for the Blind, a director of the Garland School for Homemaking, a member of the corporation of the Perkins Institution for the Blind, and a clerk of the Watertown Planning Board. He was the author of "Mechanical Draft" and "Steam Boiler Practice."

ROLAND GERRY, for many years identified with the Jones & Laughlin Steel Corporation, Pittsburgh, died at his residence in that city on Aug. 9. He was born at Waterford, Me., in 1860, and prior to his retirement on Jan. 1, 1925, had spent his entire business career of 44 years with the Jones & Laughlin company. For many years he was manager of sales in the cold-rolled department, having general supervision over cold-finished steel bars and railroad track accessories. He relinquished those duties on Feb. 1, 1922, but remained with the company for the next three years as special sales agent and a director.

HARRY E. KIES, manager, malleable and steel division, American Radiator Co., died Aug. 10 in the Buffalo General Hospital, following an operation, aged 60 years. He had been with the American Radiator Co. for many years.

### Cadmium Output in 1928 Increased

The production of metallic cadmium in the United States in 1928 amounted to 1,875,896 lb., valued at \$1,144,297, as reported by producers to the United States Bureau of Mines. This is an increase of 75 per cent in quantity over the production of 1,074,654 lb. in 1927. There were 233,101 lb. of cadmium, valued at \$128,901, imported into the United States during 1928, compared with 22,400 lb., valued at \$13,172 in 1927. No imports of this metal were recorded for 1926.

### Value of Materials Used for Fireproofing Described

Relative values of different materials used for the fireproofing of steel structures are described in a booklet written by Jack Singleton, district engineer of the American Institute of Steel Construction, Inc., New York, and published by the institute. In his discussion, Mr. Singleton states that "when fabricating plants contract for, manufacture and erect a steel building for a client, their responsibility does not end there. The steel frame is not suitable for use without a myriad of attendant details, which must be settled before the building is ready for occupancy. Chief of these is the fireproofing of the steel skeleton, vitally necessary to protect the very investment itself."

# Machinery Markets and News of the Works

## Tool Buying Has Slackened

Sales, However, Are Running Well Ahead of Those in Same Period of Last Year

**T**HERE has been a slackening in machine tool buying the past week, attributed in large measure to the vacation season. Sales, however, are running well ahead of those in August, 1928, and continued good demand from a variety of sources insures total bookings considerably above normal for this time of the year.

Some builders, including a Cleveland turret lathe maker, report that business this month has paralleled that in July, but most companies state that August has brought a slight recession.

The matter of deliveries is an important factor affecting sales at the moment. In numerous cases buyers

are finding that they cannot get tools for at least several months or longer, and therefore are refraining from placing orders.

The General Electric Co. has contracted for additional equipment for its electric refrigerator manufacturing department, and the Westinghouse Electric & Mfg. Co., which is entering the electric refrigerator field, has purchased tools for its new production division. The International Harvester Co. has bought a few tools for its Rock Island, Ill., plant.

The Santa Fe has closed for several items, while the Chicago, Milwaukee, St. Paul & Pacific is inquiring for two switch planers.

## New York

**N**EW YORK, Aug. 13.—Machine tool buying so far this month compares favorably with that of July. Orders are mostly for single tools, except for the continued buying by large users, especially the General Electric Co., which has pending two tools for its Lynn plant, and six engine lathes for Schenectady. The Westinghouse Electric & Mfg. Co., which has bought more than 25 tools since the first of the year for its refrigerator manufacturing plant at Springfield, Mass., has issued an additional inquiry that includes two production lathes. Deliveries on most tools are extended, in some cases into December and January.

Contract has been let by Chevrolet Motor Co., Detroit, to John W. Cowper Co., Inc., Buffalo, for new assembling plant at Tarrytown, N. Y., with main one-story unit, 400 x 1200 ft., and smaller buildings, to cost more than \$2,000,000 with equipment.

Cylinder Grinding Co., New York, has leased building at 334 West Seventieth Street for new machine shop; part of works will be given over exclusively to production of piston rings.

Mohawk Carpet Mills, Inc., Amsterdam, N. Y., has plans for new steam power house to cost about \$200,000 with equipment.

Board of Education, Rensselaer, N. Y., is said to be planning installation of manual training equipment in new junior high and grade school to cost about \$200,000, for which revised plans are being drawn by C. H. Gardiner, 75 State Street, Albany, N. Y., architect.

John J. Raskob, identified with General Motors Corporation, and associates have acquired a majority interest in Aero Supply Mfg. Co., College Point, L. I., and will be active in management. Company specializes in manufacture of airplane hardware and is said to be planning extension. It recently acquired Standard Automatic Products Corporation, Corry, Pa., manufacturer of turnbuckles and kindred equipment for aircraft, and National Steel Products Co., Dayton, Ohio, manufacturer of steel specialties for airplanes, and will continue both companies as subsidiaries.

Albany Steel & Iron Supply Co., Albany, N. Y., is considering a one-story addition to storage and distributing plant to cost about \$35,000 including equipment. F. A. Hunsdorfer is president.

C. M. Morhous, 13 Stetson Avenue, Plattsburg, N. Y., and associates have organized Mohodo Aircraft Co., with capital of \$50,000, and plan early operation of local plant to manufacture airplanes and parts. L. A. Bouyea, Plattsburg, is also interested in new organization.

Todd Shipyards Corporation, 25 Broadway, New York, is establishing a new division at its South Brooklyn works

for repair of marine turbine engines, including machinery and facilities for manufacture of turbine blades and other parts. C. C. Seigh, formerly connected with Westinghouse Electric & Mfg. Co., East Pittsburgh, will be in charge of department.

Westchester County Board of Supervisors, White Plains, N. Y., has authorized purchase of property at Croton Point Park for establishment of County airport. Present acquisition will soon be increased to about six acres by further purchases, and plans will be drawn for hangars, repair shops, and other units, to cost more than \$100,000 with equipment. County engineering department will be in charge.

C. B. Meyers, 31 Union Square, New York, architect, has plans for multi-story automobile service, repair and garage building, to cost more than \$150,000 with equipment.

Curtiss Airports Corporation, 27-29 West Fifty-seventh Street, New York, is said to have plans for airplane base and airport near Milwaukee, consisting of hangars, repair shops, and other units, to cost about \$100,000 with equipment.

Western Electric Co., 195 Broadway, New York, manufacturer of telephone equipment, radio apparatus, cable, etc., has leased three buildings at plant of Riegel Sack Co., Jersey City, N. J., totaling 150,000 sq. ft. floor space, for new branch plant to be operated in conjunction with works at Kearny, N. J. Acquired property will be used primarily for production of telephone apparatus.

Wood Newspaper Machinery Corporation, 688 South Second Street, Plainfield, N. J., manufacturer of printing machinery, etc., will soon begin erection of one-story addition, 90 x 160 ft., for which general contract recently was awarded to Wight-Abbott Corporation, 705 Park Avenue, New York, to cost over \$55,000 with equipment.

Board of Education, Essex County Vocational Schools, Hall of Records, Newark, will receive bids on general contract until Aug. 27 for three-story boys' vocational school at Bloomfield, N. J., to cost \$500,000 with equipment. Gilbert & Betelle, Chamber of Commerce Building, Newark, are architects. Robert O. Beebe is director.

Long Branch Country Club & Airport, Long Branch, care of R. Kearney Reid, Citizens' National Bank, Broadway, trustee, has plans for an airport at Katonah, to include hangar, repair shop, and other units, to cost more than \$75,000 with equipment. Arthur E. Gravatt, address noted, is architect for organization.

Globe Machine & Tool Co., Newark, has leased floor in building at 261 Rose Street, to manufacture tools, dies and kindred specialties.

Stilson Mfg. Co., West Orange, N. J., has leased building at 82 Main Street, for manufacture of metal goods and novelties.



## South Atlantic

**B**ALTIMORE, Aug. 12. — W. A. Pingles, Inc., 29 South Howard Street, Baltimore, manufacturer of sheet metal products, has rejected bids recently received for a two-story plant, to cost about \$65,000 with equipment, and is said to be planning to ask new bids on general contract. E. G. Blanke, 330 North Charles Street, is architect. William A. Pingles is president.

Leathersteel Products Co., Garrett Building, Baltimore, has been organized to take over and expand company of same name, with headquarters at 73 Long Wharf, Boston, specializing in manufacture of combination steel-leather mats and similar products. Plans are under way for establishment of new plant at Baltimore, with removal of present Boston works to that location. Charles H. Dankmeyer is president of new company, and John H. Mooney, vice-president.

Sylvania Industrial Corporation, 122 East Forty-second Street, New York, recently organized with capital of \$3,500,000, has taken over 200-acre tract near Rappahannock River, Fredericksburg, Va., and plans construction of mill to manufacture transparent and other processed paper products. Initial mill will cost over \$750,000 with machinery. Project will include a machine shop and boiler house.

Firestone Tire & Rubber Co., Akron, Ohio, has purchased property on Oak Street, Baltimore, as site for three-story factory branch, service and sales building, 85 x 235 ft., to cost about \$200,000 with equipment.

Goodyear Tire & Rubber Co., Akron, Ohio, is reported planning new mill near Richmond, Ga., to cost more than \$500,000 with equipment.

Arctic Air Co., Inc., Mousey Building, Baltimore, recently organized by Carter F. Hall, is considering establishment of plant near Wheeling, W. Va., to manufacture electrically-operated water-cooling equipment for railroads, industrial and other service, initial unit to cost about \$20,000 with equipment.

Wicomico County Board of Education, Salisbury, Md., is considering installation of manual training equipment in new high school to cost about \$300,000, for which bids will be asked soon on general contract. Smith & May, Calvert Building, Baltimore, are architects.

Nashville, Chattanooga & St. Louis Railway Co., Nashville, Tenn., in co-operation with United States Cold Storage & Warehouse Co., 2101 West Pershing Road, Chicago, is reported planning twelve-story cold storage warehouse and refrigerating plant at Atlanta, Ga., to include both dry and cold storage divisions, and railroad car facilities, to cost \$2,000,000 with equipment.

Pittsair Aviation, Inc., Land Title Building, Philadelphia, operated by North American Aviation, Inc., is said to be planning construction of hangar, 150 x 250 ft., with repair and reconditioning shop, at Candler Field, Atlanta, Ga., to cost about \$60,000 with equipment.

Board of Trustees, Loyola College, Charles Street, Baltimore, has plans for three-story engineering building, to cost about \$150,000 with equipment, and expects to ask bids on general contract in fall. L. R. White, Hearst Tower Building, is architect.

Standard Paper Mfg. Co., Richmond, Va., has begun work on three-story ad-

dition to mill, 50 x 150 ft., to cost about \$70,000 with machinery.

Mueller Co., Decatur, Ill., manufacturer of brass plumbing fixtures, has awarded contract to Smith & Williams, Atlanta, for a branch plant at Atlanta, to cost \$80,000 with equipment.

## Philadelphia

**P**HILADELPHIA, Aug. 12.—Contract has been let by John G. Lorenz Corporation, Thirty-third and Reed Streets, Philadelphia, manufacturer of steel and iron products, to Farrell-Roth Construction Co., 24 South Forty-sixth Street, for one-story addition, totaling 24,000 sq. ft. floor space, to cost about \$80,000 with equipment. E. J. Fitzmaurice, Pennsylvania Building, is consulting engineer.

Eaton Bumper & Spring Service Co., 223 North Twenty-second Street, Philadelphia, a subsidiary of Eaton Spring & Axle Co., Cleveland, has leased new one-story building, 72 x 170 ft., to be erected at 1521 North Third Street, for a new service, repair and sales unit, to cost about \$75,000 with equipment.

Crane Co., 1391 Locust Street, Philadelphia, with headquarters at 836 South Michigan Avenue, Chicago, is said to have plans for new local factory branch and distributing plant, to cost about \$85,000 with equipment.

West Philadelphia Motor Co., 1615 Walnut Street, Philadelphia, has awarded general contract to Wark Co., 1600 Walnut Street, for two-story service, repair and sales building, 65 x 214 ft., to cost about \$100,000 with equipment.

F. & E. Aubel, 2503 Germantown Avenue, Philadelphia, operating a general iron and steel works, are considering a new one-story unit, to cost about \$60,000 with equipment.

Judson C. Burns, Inc., Eleventh and Chestnut Streets, Philadelphia, distributor of electric refrigerators, electric washing machines, etc., has leased new building totaling 20,000 sq. ft. floor space, for new storage and distributing plant, to include service and repair departments.

Koehne & Co., Philadelphia, has been organized by Harry Fomalont, 106 South Fifty-ninth Street, and associates, to take over and expand company of same name, with local headquarters in Weightman Building, manufacturer of coal-saving devices, thermostat combustion units and kindred specialties. Horace J. Mullin, 2232 North Nineteenth Street, is interested in new organization.

Atlantic City Electric Co., Atlantic City, N. J., has plans for a new power switching and substation at Pleasantville, to cost more than \$500,000 with equipment. It will be used in conjunction with new generating station at Deepwater Point on Delaware River, now in course of construction, to cost \$10,000,000. Project will include steel tower transmission line from power plant to Pleasantville and neighboring points, to cost about \$1,000,000.

Harrisburg Gas Co., Harrisburg, Pa., has plans for a one and two-story equipment, storage and distributing plant, with service and repair department, to cost about \$175,000 with equipment. United Engineers & Constructors, Inc., Broad and Arch Streets, Philadelphia, is architect and engineer.

Traveling ovens, power equipment, conveying and other machinery will be

installed by General Baking Co., 420 Lexington Avenue, New York, in new plant at Allentown, Pa., to cost \$400,000. Company will build a similar plant at Detroit, to cost over \$850,000 with equipment.

Philadelphia & Reading Coal & Iron Co., Reading Terminal, Philadelphia, will install coal-mining and operating equipment in connection with opening up of large new properties at Bear Valley Mines, near Shamokin, Pa., entire development to cost more than \$300,000.

## Detroit

**D**ETROIT, Aug. 12.—Contract has been let by Auto Specialties Mfg. Co., Monroe, Mich., manufacturer of automobile jacks, malleable castings, etc., to Owen-Ames-Kimball Co., Grand Rapids, Mich., for group of one-story plant units to increase floor space about 85,000 sq. ft. Equipment will include two electric furnaces, conveying and other machinery, total project to cost \$750,000. F. E. Davidson, 53 West Jackson Boulevard, Chicago, is architect.

City Council, Grand Haven, Mich., has plans for an addition to municipal electric light and power plant, to cost more than \$200,000 with equipment. Giffes, Hamilton & Weber, Grand Rapids National Bank Building, Grand Rapids, are architects.

General Parts Corporation, recently organized, will take over and succeed to company of same name with main plant at Flint, Mich., manufacturer of automobile parts, as well as parts for electric locomotives, etc. New company has arranged for stock issue of \$850,000, part of fund to be used for expansion.

Panyard Piston Ring Co., Muskegon, Mich., has been organized by P. P. Schmorbach and C. G. Bigge, both of Manistee, Mich., to take over plant and other assets of Panyard Machine & Mfg. Co., Muskegon, recently acquired at receiver's sale. New company will operate with capital of \$50,000. Extensions and improvements will be made.

Checker Cab Mfg. Corporation, Gibson Street, Kalamazoo, Mich., manufacturer of taxicabs, will soon take bids on general contract for one and two-story addition, to cost over \$100,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect and engineer.

Michigan Bell Telephone Co., 1365 Cass Avenue, Detroit, will soon take bids on general contract for a one-story equipment storage and distributing plant at Grand Rapids, to include mechanical and electrical repair and service departments, as well as automobile service division, to cost \$185,000 with equipment. Smith, Hinchman & Grylls, Marquette Building, Detroit, are architects.

National Petroleum Corporation, Grand Rapids, Mich., has recently acquired producing properties of Puritan Oil Corporation, Muskegon, Mich., as well as oil lands in other counties. New owner contemplates extensions and improvements in Muskegon plant, including storage and distributing facilities.

Chevrolet Motor Co., Detroit, will soon take bids on general contract for one and two-story addition to local assembling plant, to cost more than \$200,000 with equipment.

Detroit Butcher Supply Co., 1455 Gratiot Avenue, Detroit, manufacturer of knives, fixtures, etc., has awarded

general contract to W. S. Pocock & Co., 1726 Seward Street, for two-story plant, to cost about \$55,000 with equipment. Pollmar & Ropes, Hoffman Building, are architects.

## Chicago

**C**HICAGO, Aug. 12.—Local machine tool dealers look for a more active fall market as the result of industrial expansion now under way. Current sales are well above those of August, 1928, but in most instances show a decline from last month. The International Harvester Co. has placed a few orders for its Rock Island plant. Another farm implement manufacturer, who had expected to issue a list this summer, is said to be making use of considerable standard equipment which was replaced earlier in the year by special machine tools.

The Santa Fe has closed several items of long standing and the Northern Pacific will buy a 24-in. shaper. The Burlington is in need of a floor stand grinder and the American Steel Foundries will purchase a large turret lathe. Several railroads have asked for preliminary figures for use in preparing 1930 budgets. Deliveries remain stationary.

Chicago Steel Tank Co., 6400 West Sixty-sixth Street, Chicago, is building an addition, 120 x 500 ft. Foltz & Co. are architects and engineers.

Louis E. Emerman, machinery jobber, has purchased McCord Mfg. Co. plant at 120th Street and Illinois Central Railroad, and will concentrate distributing operations there.

Ero Mfg. Co., 2234 Ogden Avenue, Chicago, manufacturer of automobile equipment and accessories, has leased one-story and basement factory, 75 x 100 ft., at 2229 Ogden Avenue, for expansion.

Brooks, Bramhall & Dague, First National Bank Building, Decatur, Ill., architects, will soon take bids on general contract for two-story automobile service, repair and garage building, to cost \$100,000 with equipment.

Greenlee Brothers, Inc., Columbia and Twelfth Streets, Rockford, Ill., manufacturer of wood-working machinery, tools, etc., has awarded general contract to Security Building Co. for one-story addition, 100 x 120 ft., to cost over \$75,000 with equipment.

Golden Cycle Mill Co., Colorado Springs, Colo., A. E. Carlton, president, is planning construction of new flotation mill at mining properties, to cost about \$65,000 with machinery.

Lyle Signs, Inc., 171 Twenty-seventh Avenue, S. E., Minneapolis, Minn., manufacturer of signs, displays, etc., has awarded general contract to Holm-Johnson Co., Essex Building, for one-story plant, 40 x 150 ft., with extension, 45 x 60 ft., to cost about \$40,000 with equipment. C. P. Pesek, 1641 Hennepin Avenue, is architect.

Iowa Public Service Co., Sioux City, Iowa, has plans for new steam-operated electric power house at Storm Lake, Iowa, to cost about \$45,000 with equipment.

State Board of Administration, Bismarck, N. D., is planning early call for bids for coal-handling, conveying and storage equipment for installation at Valley City, N. D., to cost about \$17,000. Ernest R. Boyd, Jamestown, N. D., is architect.

## The Crane Market

**A**FAIR volume of inquiry for overhead cranes is pending, but buyers are slow to place business. Buyers of crawl-tread cranes are active, but standard locomotive cranes are quiet. The Foundation Co., 120 Liberty Street, New York, has closed on four crawl-tread cranes for export and the Worthington Pump & Machinery Co., Harrison, N. J., has bought a used locomotive crane.

Among recent purchases are:

De Laival Separator Co., Poughkeepsie, N. Y., 5-ton, double-hook, magnet crane from Whiting Corporation.

Foundation Co., 120 Liberty Street, New York, four 15-ton crawl-tread cranes for export from Industrial-Brownhoist Corporation.

Worthington Pump & Machinery Co., Harrison, N. J., used 20-ton Orton locomotive crane, reported purchased from Philip T. King, New York.

Standard Oil Co., Whiting, Ind., crawl-tread locomotive crane from Orton Crane & Shovel Co.

Alex. N. Smith, Harriman, N. Y., crawl-tread shovel and crane from Orton Crane & Shovel Co.

Rockford Iron Works, Rockford, Ill., 5-ton, 20-ft. span overhead electric crane from unnamed builder.

Crane Co., 836 South Michigan Avenue, Chicago, has plans for a one-story factory branch and distributing plant at Waukegan, Ill., to cost \$55,000 with equipment. C. W. Webster, 5 North Genesee Street, Waukegan, is architect.

Board of Education, Quincy, Ill., is considering installation of manual training equipment in new three-story high school to cost \$450,000, for which bids will be asked on general contract early in fall. Behrensmeier & Haffner, W. C. T. Building, are architects.

General Mica, Inc., First National Bank Building, Pueblo, Colo., Joseph Stanko, head, has plans for first unit of new mica grinding and refining plant at Blende, about three miles from city, to cost about \$30,000 with equipment.

## New England

**B**OSTON, Aug. 12.—The past week was one of the quietest experienced in many months by machine tool dealers, and manufacturers also report a falling off in business. There has, however, been some activity in presses and hammers of the lighter type. New England dealers look for good business late in 1929 and early next year if actual and tentative inquiries can be taken as an indication. Deliveries, however, will be an important factor for several months. Particular interest is being taken in the development of aircraft manufacture in New England.

Although large tools are selling slowly, demand for small tools holds up remarkably well.

Bridgeport Brass Co., East Main Street, Bridgeport, Conn., contemplates erection of a storage shed, 42 x 77 ft. Light conveying and lifting equipment may be purchased.

Sikorsky Mfg. Co., Stratford, Conn.,

has plans for a one-story wind laboratory, 50 x 100 ft., for which fan and blower equipment is required.

Hollingsworth & Vose, 333 Washington Street, Boston, paper manufacturers, are erecting a machine shop addition at East Walpole, Mass. Metal-working tools are under consideration.

Pitney-Bowes Postage Meter Co., Stamford, Conn., manufacturer of postage affixing machines and parts, etc., has plans for a two-story addition, 60 x 300 ft., including improvements in present buildings, to cost more than \$85,000 with equipment. Fletcher-Thompson, Inc., Bridgeport, Conn., is architect and engineer.

Strathmore Paper Co., Mittleague, Mass., has plans for a hydroelectric generating plant for mill service at West Springfield, Mass., to cost more than \$75,000 with equipment. L. R. Howe is company architect in charge.

Wetmore-Morse Granite Co., Barre, Vt., has plans for a one-story machine and forge shop, 50 x 150 ft., to cost about \$45,000 with equipment. L. F. Caroni & Co., 1056 Chapel Street, New Haven, Conn., are architects.

Boston & Albany Railroad Co., South Station, Boston, has awarded contract to J. F. Fitzgerald Construction Co., 38 Chauncy Street, for new engine house with repair facilities at Beacon Park yards, Allston, to cost more than \$50,000 with equipment.

Eastern Aircraft Corporation, Pawtucket, R. I., recently organized by Ray C. Van Arsdale and associates, has acquired local plant of Pressed Metal Co., for manufacture of all-metal aircraft. Company will be affiliated with Bavarian Aircraft Corporation of Germany, and will produce in this country Messerschmidt type of aircraft now being manufactured there. Initial models to cover a three-passenger cabin plane, seven-passenger plane, and small training plane.

## Buffalo

**B**UFFALO, Aug. 12.—Spriesch Tool & Mfg. Co., 133 South Elmwood Avenue, Buffalo, manufacturer of tools, dies, etc., has plans for a one-story machine shop, to cost about \$30,000 with equipment. Company was recently organized to take over business of Joseph Spriesch. George A. Setter, 67 Burch Avenue, West, is architect.

Eastman Kodak Co., Rochester, N. Y., has authorized an expansion and improvement program, to cost about \$15,000,000 over three-year period, including buildings and equipment at local Kodak Park factories, and extensions in subsidiary plant of Tennessee-Eastman Corporation, Kingsport, Tenn., on which work recently was started. Last-noted project is reported to cost about \$5,000,000.

Central High School District No. 1, Amherst, N. Y., is planning installation of manual training equipment in new high school to cost about \$400,000. Paul H. Harbach and James W. Kideney, 271 Delaware Avenue, Buffalo, are architects.

Fleet Aircraft, Inc., 2956 Elmwood Avenue, Buffalo, manufacturer of commercial airplanes and parts, is considering establishment of a new assembling plant in Southern California for Pacific Coast trade, to cost more than \$75,000 with equipment. Company is affiliated with Consolidated Aircraft Co., same address. Lawrence D. Bell is president.

Department of Public Works, Municipal Building, Buffalo, has plans for marine airport foot of Georgia Street, including hangars, repair shops and other units, to cost about \$150,000 with equipment. Col. Howard Beck, 374 Delaware Avenue, city architect, is in charge.

## Cleveland

CLEVELAND, Aug. 12.—Machine tool sales and inquiry tapered off the past week. However, the volume of business is still good for this season of the year. Orders were confined to single machines. Demand is well scattered with little business coming from the automotive industry. Turbine lathe sales so far this month have equaled the good volume of business taken in the corresponding period of July. Prospective buyers are slow in placing orders, which is attributed in a large measure to the vacation season.

National Bronze & Aluminum Foundry Co., East Eighty-eighth Street and Laisy Avenue, Cleveland, will enlarge its plant by erection of a one-story building, 71 x 109 x 300 ft., monitor-type.

Dill Mfg. Co., 684 East Eighty-second Street, Cleveland, manufacturer of tire valves and valve parts, has acquired a building site on Mandalay Road on which it plans erection of a new factory to more than double present capacity.

Whiteway Stamping Co., 1204 East Fifty-fifth Street, contemplates erection of a new plant with 40,000 sq. ft. of floor space on part of site formerly occupied by King Bridge Co.

Plans are under way by Cleveland Heights Air Terminal, Marshall Building, Cleveland, R. F. Cunningham, vice-president, for airport on Ridgebury Boulevard, consisting of hangars, repair shops, oil storage and other buildings, to cost more than \$1,000,000 including equipment.

Toledo Foundry & Machine Co., Toledo, Ohio, has plans for complete electrification of plant and will soon begin installation of equipment. W. J. Wuerfel is secretary and treasurer.

Hercules Motor Corporation, Canton, Ohio, manufacturer of gasoline engines for motor trucks, buses, etc., and other power units, has acquired 3-acre tract adjoining plant, and will erect one-story addition to total about 68,000 sq. ft. floor space, designed to increase present capacity about 50 per cent. It is estimated to cost over \$350,000 with equipment.

A. L. Licker, Guarantee Title Building, Cleveland, and associates have awarded general contract to Simon Construction Co., 785 East Eighty-eighth Street, for one-story automobile service, repair and garage building, 80 x 430 ft., to cost \$150,000 with equipment.

Benton & Anderson Co., Cleveland, manufacturer of welding equipment, etc., has purchased Taylor-Winfield Corporation, Warren, Ohio, manufacturer of electric butt and other welding apparatus, oil cans, etc., and will consolidate. Company will be operated as subsidiary. Expansion in output is planned. Purchasing company has factory branches at Chicago, Detroit and St. Louis.

Cleveland Electric Illuminating Co., Illuminating Building, Cleveland, has plans for new four-story steam-operated electric generating station at Ashtabula, Ohio, 250 x 325 ft., to cost more than

\$5,000,000 with equipment. Contract for superstructure has been let to Hunkin-Conkey Construction Co., Newman-Stern Building, Cleveland.

Board of Education, Mentor Rural School District, Mentor, Ohio, is considering installation of manual training equipment in new two-story high school addition to cost about \$200,000. Miller & Son, 27 West Madison Street, Youngstown, are architects.

## Pittsburgh

PITTSBURGH, Aug. 12.—The machinery trade in this district continues exceedingly active. Inquiries are still piling up and the volume of work in prospect indicates extension of heavy buying into the fall. Westinghouse Electric & Mfg. Co. is closing regularly against its third quarter list and is also issuing additional inquiries from time to time. United States Aluminum Co. has delayed the purchase of tools for its new machine shop at New Kensington until about Sept. 1. Another company in this district has inquired for 20 or more tools and the Bethlehem Steel Co. is expected soon to close against six machines for its Cambria plant at Johnstown.

Railroad buying leaves something to be desired, but the volume of industrial work has more than made up for this inactivity. However, the Baltimore & Ohio is now inquiring for several tools, including an 18-in. lathe and a 3-ft. radial drill.

Steel companies in this and nearby districts with large expansion programs under way are rather slow in making known their tool requirements, but the delay is welcomed by some dealers who will be in better position to quote on this business later in the year.

Pittsburgh Steel Co., Union Trust Building, Pittsburgh, has plans for new by-products plant at Gibbstown, near Monessen, Pa., to cost over \$2,000,000 with equipment.

Coshocton Iron Co., East Monongahela, Pa., is erecting one-story addition to local mill, to cost over \$130,000 with equipment. Company specializes in production of mining equipment, castings, etc., and is an interest of Combustion Engineering Corporation, 200 Madison Avenue, New York.

General Electric Co., Schenectady, will carry out an extension program at its New Kensington, Pa., works to cost about \$100,000. Two new units are being established for pickling and other service, replacing other structures. Company has leased former plant of Commercial Box Co., and will remodel for making welding electrodes. F. H. Mains is local manager.

H. M. Cresswell, 215 Glen Avenue, Ellwood City, Pa., and associates have organized Standard Cotter Pin Co., with capital of \$75,000, and plan early operation of local factory to manufacture cotter pins and other small iron and steel specialties. John J. Tyler, 416 Ninth Street, is interested in new company.

Pennzoil Co., Oil City, Pa., an interest of South Penn Oil Co., 545 William Penn Way, Pittsburgh, is planning expansion at its oil refinery, to include new filter press division, boiler house and other units, to cost more than \$80,000 with equipment.

James L. Stuart, Oliver Building, Pittsburgh, engineer, has plans for a two-story

automobile service, repair and garage building, 100 x 350 ft., to cost about \$150,000 with equipment.

United Aircraft & Transport Co., New York, has purchased Standard Steel Propeller Co., 221 West Seventh Avenue, Pittsburgh, manufacturer of aircraft propellers and kindred products, and will operate as a division. Work is under way on addition to Standard company to cost more than \$100,000 with equipment.

## Gulf States

BIRMINGHAM, Aug. 12. — Alamo Airplane Co., Milan Building, San Antonio, Tex., has plans for aircraft manufacturing plant with initial unit, 106 x 300 ft., for parts production and assembling, to cost about \$40,000 with equipment. A. W. Forrester is one of heads of company; Boyd Hammond is company engineer.

Orient Petroleum Co., Wichita Falls, Tex., has plans for extensions and improvements in local oil refinery to increase capacity from 2500 to 10,000 bbl. crude oil per day. Department will be installed for production of gasoline; expansion will be carried out in storage and distributing division. Entire project will cost over \$500,000 including machinery. Company is a subsidiary of Atlantic-Pacific & Gulf Oil Co.

Champion Fibre Co., Canton, N. C., has purchased 225-acre tract at Fox, on Warrior River, about six miles from Tuscaloosa, Ala., as site for new mill to manufacture kraft paper stocks, to cost over \$3,500,000 with machinery. Company is affiliated with Champion Coated Paper Co., Hamilton, Ohio.

Prest-O-Lite Co., 30 East Forty-second Street, New York, manufacturer of acetylene equipment, welding apparatus, etc., has awarded general contract to Frost Construction Co., Tampa, Fla., for local branch plant at Tampa, one-story, to cost \$90,000 with equipment.

Both Brothers Auto Supply & Machine Co., North Flores Street, San Antonio, Tex., has plans for three-story addition to service, repair and garage building, to cost over \$100,000 with equipment. Ralph H. Cameron, Majestic Theater Building, is architect; Beretta-Stiles Co., National Bank of Commerce Building, is mechanical engineer.

Southern Air Transport Co., Fort Worth National Bank Building, Fort Worth, Tex., has approved plans for extensions at Menefee airport, New Orleans, including new repair, reconditioning and assembling building, entire program to cost about \$60,000. Thomas Hardin is vice-president and general manager.

Eagle Aircraft Corporation, Kansas City, Mo., is arranging for establishment of factory branch, parts and distributing plant at Dallas, Tex. A hangar has been leased at Love Field and other buildings will be provided. E. E. Porterfield is president. Company also operates Lincoln-Page Co., Lincoln, Neb., and Wallace Aero Co., Chicago, as subsidiaries.

Swift & Co., Union Stock Yards, Chicago, is contemplating new plant at Paris, Tex., to cost about \$135,000 with equipment.

City Council, Birmingham, is considering construction of a municipal airport on 300-acre tract near Tarrant City, to include hangars, repair shop, oil storage and other buildings, to cost more than \$90,000 with equipment. A. J. Hawkins is engineer.



Packard Motor Car Co., Detroit, will soon begin superstructure for two-story service, repair and sales building at New Orleans, 120 x 150 ft., for which general contract recently was let to J. V. & R. T. Burke, Inc., New Orleans Bank Building, to cost about \$120,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect and engineer.

## Cincinnati

**C**INCINNATI, Aug. 12.—Although the volume of new business of district machine tool manufacturers has declined slightly, demand continues brisk for August and is on a higher level than for the corresponding period last year. Fresh bookings have increased the large amount of unfilled orders and assure capacity production well into the fall. Manufacturers continue to report extended deliveries and in some instances business has been refused because of inability to make early shipments.

Chicago, Milwaukee, St. Paul & Pacific is inquiring for two switch planers for its Tomah, Wis., shops. Canadian Ingersoll-Rand Co. is in the market for one 84-in. planer and the Great Lakes Steel Corporation is asking for a 96-in. open-side planer.

Contract has been let by Hobart Mfg. Co., Troy, Ohio, manufacturer of meat choppers and kindred products, to Henry Heiser, Dayton, for one-story addition to cost about \$20,000.

Board of Education, Van Buren Township, Dayton, Ohio, is said to be planning installation of manual training equipment in new high school to cost about \$275,000. Walker & Norwich, American Building, are architects.

Officials of Realty Enterprises, Inc., Marion E. Taylor Building, Louisville, are considering erection of three-story automobile service, repair and garage building, 80 x 230 ft., to cost about \$100,000 with equipment.

Ohio Steel Foundry Co., Springfield, Ohio, has awarded general contract to A. G. Samuelson, Inc., Springfield, for a one-story addition, 100 x 200 ft., to cost about \$45,000 with equipment.

Officials of Aluminum Co. of America, Inc., Oliver Building, Pittsburgh, have organized a new power subsidiary under name of Nantahala Power & Light Co., to carry out a hydroelectric power project in Tennessee, supplementing developments of Knoxville Power Co., Knoxville, another affiliated interest. New company will have a capital of \$10,000,000. Plans are under way for a hydroelectric power plant near Fontana on Tennessee River, to be followed by similar developments at Bushnell, Needmore and Aquone. Entire project will cost over \$75,000,000 with transmission system, including hydroelectric power plant of the Knoxville Power Co., now under way at Calderwood.

Lincoln Service & Motor Sales Co., Dayton, Ohio, has plans for one-story service, repair and sales building, 100 x 225 ft., to cost about \$110,000 with equipment. Fred J. Hughes, Dayton, is architect.

## Indiana

**I**NDIANAPOLIS, Aug. 12.—Board of Works, City Hall, Indianapolis, Theodore H. Dammeyer, president, is said to be planning an automobile service, repair and garage building for municipal cars, to cost about \$100,000 with equipment.

Milroy Milling Co., Milroy, near Rushville, is planning to rebuild part of grain milling plant and elevator destroyed by fire Aug. 2.

General Insulating & Mfg. Co., Alexandria, is planning three-story addition, to cost more than \$65,000 with equipment.

Standard Oil Co. of Indiana, Inc., Indianapolis, is arranging increase in capital from \$375,000,000 to \$450,000,000, part of fund to be used for purchase of Pan-American Petroleum & Transport Co., 120 Broadway, New York, and for expansion in refineries, pipe lines, storage and distributing plants and other properties.

Indianapolis Power & Light Co., Monument Place, Indianapolis, is arranging for construction of new steam-operated electric generating plant on White River, where site has been acquired, to cost more than \$7,000,000, including steel tower transmission lines, power switching stations and other facilities.

Forse Equipment Co., Fairview and Fourteenth Streets, Anderson, manufacturer of machinery for dry-cleaning, parts, etc., is said to be planning establishment of new plant, to cost more than \$40,000 with equipment.

Bloomington Limestone Co., Bloomington, has acquired properties of Indiana Oolitic Stone Co., in that vicinity, and plans expansion for development of limestone and other quarries, with additional loading, conveying and kindred equipment.

Wabash Foundry Co., Wabash, is erecting an addition which will increase present floor space 7200 sq. ft.

## St. Louis

**S**T. LOUIS, Aug. 12.—City Council, Kirksville, Mo., has plans for a municipal electric light and power house, to cost over \$70,000 with equipment. Black & Veatch, Mutual Building, Kansas City, Mo., are consulting engineers.

City Aviation Committee, Lawton, Okla., Harry Stackhouse, chairman, has plans for a hangar, 80 x 125 ft., at municipal airport, with repair and reconditioning facilities, to cost about \$100,000 with equipment.

United Aircraft & Transport Corporation, New York, has purchased Stearman Aircraft Co., Wichita, Kan., manufacturer of commercial airplanes. Stearman company will be operated as a unit, with Lloyd Stearman in charge. Expansion in output is planned.

Schwartzmann Service Co., Inc., St. Louis, will erect a one-story and basement automobile service, repair and garage building, 135 x 182 ft., to cost more than \$100,000 with equipment. E. E. Christopher, Louderman Building, is architect.

Farmers' Gin Co., Sayre, Okla., is considering erection of three cotton oil mills at Sayre and neighboring localities, to cost about \$100,000 including equipment.

Jesco Lubricants, Inc., Kansas City, Mo., care of H. A. Miller, 4430 Park Street, architect, manufacturer of refined oil, has plans for new two-story plant at North Kansas City, to cost about \$45,000 with equipment.

Watt Plumbing Co., 608 South Cincinnati Street, Tulsa, Okla., will soon begin construction of one-story storage and distributing plant, 140 x 300 ft., to cost about \$50,000 with equipment. Mechanical shop and pipe fitting department are planned. N. B. Fleming, Commercial Building, is architect.

Chevrolet Motor Co., Detroit, is said to have acquired property at Little Rock, Ark., as site for new factory branch and parts station, one-story, 100 x 200 ft., to cost over \$100,000 with equipment.

Curtiss-Wright Corporation, Buffalo, formed recently by merger of Curtiss Aeroplane & Motor Co., Buffalo, and Wright Aeronautical Corporation, Paterson, N. J., is concluding purchase of Travel Air Co., Wichita, Kan., manufacturer of airplanes and parts. It is proposed to continue plant at Wichita and expand capacity.

Stuart Aero Products, Inc., Thirteenth and Rutger Streets, St. Louis, has been organized and is operating plant manufacturing airplane parts. A. E. Stuart is president.

## Milwaukee

**M**ILWAUKEE, Aug. 12.—The slight decline noticed by some machine tool dealers is attributed to seasonal lull and the let-up in automobile output. Production, however, is being well maintained by other branches of the metal-working industry. Inquiries continue strong. Employment figures for Aug. 1 show that 43,761 persons were employed in Milwaukee industries during July as compared with 43,814 for the previous month.

Kohler Co., Kohler, Wis., has appropriated \$1,000,000 for erection of three-story and basement addition, 80 x 600 ft., to be equipped with two Dressler tunnel kilns, each 400 ft. long, supplementing present four Dressler kilns.

Board of Water Commissioners, Sheboygan, Wis., will take bids until Aug. 27 for municipal water filtration plant to cost about \$750,000, bids to be separate for equipment and structures. William Koehn is superintendent. Burdick & Howson, Chicago, and Jerry Donahue Engineering Co., Sheboygan, are consulting engineers.

Outboard Motors Corporation, Milwaukee, is about to start erection of \$150,000 brick and steel addition to Evinrude factory, consisting of one-story shop, 80 x 255 ft.; testing room, 64 x 64 ft., and other buildings. When completed Lockwood Motor Co. division, Jackson, Mich., and Elto Outboard Motor Co. division, will remove to new structures. Stephen F. Briggs, Briggs & Stratton Co., Milwaukee, is chairman of board of directors, and J. Brown, of the same company, is engineer.

Curtiss Flying Service, Inc., New York, will start erection soon at Granville, Milwaukee County, of two hangars, 100 x 120 ft. each, with machine and service shop. Stone & Webster, Boston, have contract for buildings.

University of Wisconsin, Madison, has to let contract to C. B. Fritz & Co., 133 North Frances Street, Madison, for new mechanical engineering building, three stories, 230 x 230 ft. Total appropriation

is \$577,000. Arthur Peabody is State architect.

Northwestern Motor Co., Starr Avenue, Eau Claire, Wis., has begun construction of a one-story addition, 42 x 125 ft., to gray iron foundry.

Unit Corporation of America, Fifty-third Avenue and Burnham Street, Milwaukee, is erecting a one-story factory to house Universal Power Shovel Co., Detroit, a subsidiary, which will move to Milwaukee about Aug. 15. Latter company manufactures excavators, gears, clutches and other mechanical devices.

## Pacific Coast

**SAN FRANCISCO**, Aug. 8.—Contract has been let by Boiler, Tank & Pipe Co., 4964 Piedmont Avenue, Oakland, Cal., to Herrick Iron Works, Eighteenth and Campbell Streets, for one-story plant on 3-acre tract, initial unit to cost about \$65,000 with equipment. A crane runway, 60-ft. span and 350 ft. long will be constructed.

Crescent City Grammar School District, Crescent City, Cal., has approved plans for a one-story manual training shop at local school, to cost about \$25,000 with equipment. Norman R. Coulter, 16 Kearny Street, San Francisco, is architect.

S. & W. Lawn Sprinkler Co., 2308 West Washington Street, Los Angeles, has plans for one-story mechanical shop, to cost about \$25,000 with equipment. Edward L. DeVall Co., 2106 West Washington Street, is architect.

Willard Storage Battery Co., East 131st Street and St. Clair Avenue, Cleveland, has engaged Claude Beelman, Union Bank Building, Los Angeles, architect, to prepare plans for new branch plant on site recently acquired in Union Pacific industrial district, to cost about \$600,000 with equipment.

Anderson Barnagrove Mfg. Co., West Julian Street, San Jose, Cal., manufacturer of fruit-handling and packing machinery, has plans for one-story assembling plant, 85 x 225 ft., to cost about \$45,000 with equipment. Charles W. McKenzie, Bank of San Jose Building, is architect.

International Harvester Co., 606 South Michigan Avenue, Chicago, is planning new factory branch and distributing plant at Tacoma, Wash., to cost about \$35,000 with equipment. A parts and service department will be installed.

Snohomish Iron Works, Snohomish, Wash., is said to be planning to rebuild part of plant recently destroyed by fire.

Board of City Trustees, Sacramento, Cal., is considering construction of municipal airport on 230-acre tract in East Sacramento district, including hangars, repair shops, oil storage and other buildings, to cost over \$500,000 with equipment. Jens C. Petersen, California State Life Building, is architect.

Central Arizona Light & Power Co., Phoenix, will soon begin construction of steam-operated electric generating plant near city, to cost more than \$2,000,000, including steel tower transmission system. Company is operated by Electric Bond & Share Co., 2 Rector Street, New York.

Firestone Tire & Rubber Co., 7 East Polk Street, Phoenix, Ariz., with headquarters at Akron, Ohio, has asked bids on general contract for new factory branch and distributing plant, 140 x 181 ft., to cost about \$80,000 with equipment.

P. & C. Hand Forged Tool Co., Milwaukee, suburb of Portland, Ore., is contemplating erection of an addition or an entire new plant, to take care of increased business.

Los Angeles Steel Casting Co., Los Angeles, has been formed to take over business of Los Angeles Foundry Co., manufacturer of steel castings. Personnel of latter company will remain unchanged.

## Canada

**TORONTO**, Aug. 12.—Some improvement is noted in demand for machine tools. Total sales for the week, however, were slightly below those of the previous week, due to the holiday on Monday. New business is appearing in good volume but generally in single tools for replacement. Inquiries are good and indicate a strong demand within the next few months. Small tools are active.

Canadian Lightning Fastener Co., St. Catharines, Ont., will build an addition to double present capacity. Contract for construction has been awarded to Newman Brothers. C. J. Gibson, Toronto, is architect. Equipment will be purchased.

British Metal Corporation of Canada, Sterling, N. B., will build an addition and erect a power house.

Bids will be called in about a week for main building, boiler house, etc., at Longueuil, Que., for Fairchild Aircraft, Ltd., 1253 McGill College Avenue, Montreal. W. H. Wardell, 1463 Union Avenue, is engineer.

Hiram Walker & Sons Metal Products, Ltd., Kildare Road, Walkerville, Ont., have started work on a one-story addition, 40 x 60 ft., to cost \$25,000.

Tenders will be called soon for an addition to plant of Kingston Shipbuilding Co., Ltd., Kingston, Ont.

International Pulp & Paper Co., Ltd., Montreal, will start work soon on erection of a pulp and paper mill at Chatham, N. B. Later, company also proposes to build a mill at St. Leonard, N. B.

Hayes Wheels & Forgings, Ltd., has started work on an addition to Merriton, Ont., plant to cost \$100,000 and will spend \$225,000 on addition to plant and machinery at Chatham, Ont.

Plant of Canada Crushed Stone Co., Vinemount, Ont., was destroyed by fire with a loss of between \$80,000 and \$90,000, covered by insurance. Owners plan to rebuild immediately.

Simmons, Ltd., Montreal, will start work at once on an addition to local plant to cost \$145,000.

## Western Canada

Westminster Paper Co., New Westminster, B. C., whose mill was destroyed by fire, announces that it will rebuild on Fraser River, at a cost of \$1,000,000.

## Foreign

**PLANS** have been approved by Manila Electric Co., Manila, P. I., for a hydroelectric generating plant at Botocan Falls, near Mayjay, Province of Laguna, for initial capacity of 15,000 hp. Transmission line will be built to Manila and other points, project to cost more than \$1,500,000 with equipment. It is proposed to purchase a considerable part of machinery in United States.

Ford Motor Co., Detroit, in connection with program for establishment of European plants, has authorized new assembling works near Warsaw, Poland, to cost more than \$750,000 with equipment. Company is completing remodeling of plant at Marina, near Cork, Ireland, heretofore used as automobile assembling works and to be run in future exclusively for production of Fordson tractors.

Continuing its foreign expansion program, Spencer Kellogg & Sons, Inc., Niagara Square, Buffalo, manufacturer of linseed and other refined oils, has purchased plant and business of Copra Milling Corporation, Manila, P. I., producer of coconut oils. Extensions and improvements are planned.

Monterrey Iron & Steel Co., Monterrey, State of Nuevo Leon, Mexico, is building new mill for manufacture of steel wheels for street and railroad cars, as well as smaller wheel units for mining and industrial service. It is reported to cost more than \$100,000 and is scheduled for service early in fall.

Eddeholm Co., Stockholm, Sweden, is planning construction of a new paper mill at Skoghall for production of kraft stocks. It is also proposed to build an addition to electro-chemical works in same district, entire project to cost about 5,000,000 kroner with machinery.

Officials of American & Foreign Power Co., operated by Electric Bond & Share Co., 2 Rector Street, New York, have organized Shanghai Power Co. to take over and operate electric power plant and properties of International Settlement, Shanghai, China, recently acquired. Plans are being considered for expansion.

## New Trade Publications

**Gas Burners.**—American Gas Furnace Co., Elizabeth, N. J. In bulletin No. 6 is cataloged a number of gas burners produced by the company, including blow pipes, machlet tips, glass fires and fish tail burners.

**Stationary Boiler Superheaters.**—Superheater Co., New York. In bulletin T-19, entitled "Elesco Multiple-Loop Single-Pass Superheater," is shown the application of the same basic principle—multiple-loop, single-pass arrangement—to all Elesco superheaters for stationary boilers.

**Duriron Centrifugal Pumps.**—Bulletins 151 and 152, Duriron Co., Dayton, Ohio, describe pumps with 2 and 4 in. suction for handling corrosive or abrasive fluids. Special features are

a duriron shrouding which protects the shaft clear through the stuffing box, and a stuffing box which will not leak.

**Tanks.**—Commercial Shearing & Stamping Co., Youngstown, Ohio. A pamphlet of 12 pages describes the company's line of "cold-formed" tank heads and tank accessories.

**Ladles.**—Whiting Corporation, Harvey, Ill. Catalog No. 210, containing 24 well illustrated pages, gives full details and specifications of the company's new ball bearing helical worm-gear ladles, as well as information about the company's standard worm-gear ladle and pin spur-gear ladle. This catalog supersedes catalog No. 202.